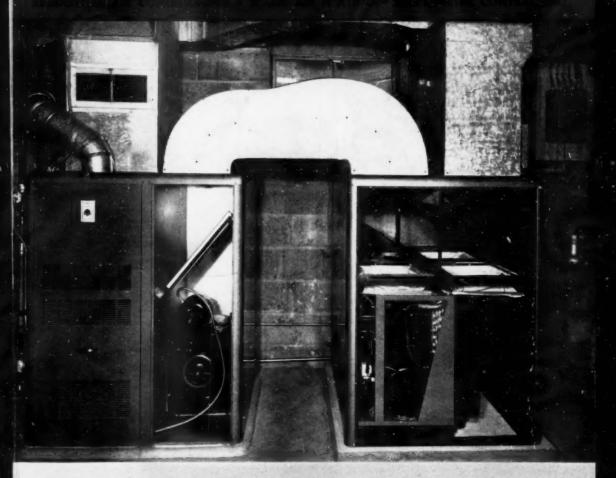
# ARTISAN



 RESIDENTIAL COOLING equipment is easily adapted to existing forced warm air heating systems to provide year 'round comfort. Page 42.

 HOW DEALER SALES can be increased in the face of stiffening competition is outlined in a seven step plan. Page 48.  USING FOUR INCH round pipe for perimeter heating systems is explained by Clarence Grandstaff. Page 55.



J-C Powerated\* Furnaces provide large-scale heating or tempered industrial air ventilation . . . in a single installation.



The right J-C designed heating and ventilating system "pays off" in increased industrial efficiency. Why not let our Engineer covering your territory assist with your heating or ventilating plans, or contact us here at Saginaw.

Jackson & Church contractors are ready now to supply the needs of expanding industry with job-specified Powerated\* warm air heating or ventilating systems. Powerated\* models are available and are being shipped in good quantity, in a range of sizes from 380,000 Btu to 3,800,000 Btu output per hour to meet all heavy-duty requirements.

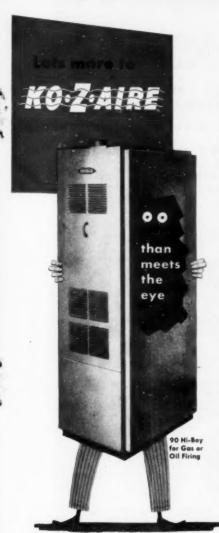
\*Powerated furnaces are designed to meet specific Btv requirements.

. . . America's Largest and Most Complete Warm Air Heating Line . . .



JACKSON & CHURCH COMPANY, SAGINAW, MICHIGAN





NE glance at the Hi-Boys pictured here tells you that KO-Z-AIRE's got what it takes in styling and good looks.

But the fellow who said a picture speaks louder than words wasn't talking about these skillfully engineered KO-Z-AIRE units. For it would take a book to describe in full all the many reasons why you profit more with the KO-Z-AIRE line.

As proof, there's KO-Z-AIRE's one-piece, gas-tight welded steel heat exchanger, that's designed for efficient heat transfer.

There's the feature of the integrally designed channel mounted base of KO-Z-AIRE units - which increases sturdiness - eliminates any need for special "grouting" and keeps cabinet dust-tight, leak-proof.

There's the fact that most KO-Z-AIRE furnaces are assembled and wired at the factory — to help speed installation, make it easier for you.

Then there's the all-important "Zero Clearance" approvals that these KO-Z-AIRE Hi-Boys have - which cuts costs for you since it means they can be installed in alcoves, utility rooms or closets.

Or there's the competitive edge you have with KO-Z-AIRE as all Hi-Boys, and most other models, can be converted from one fuel to another at any time - so you can keep sales up despite restrictions.

We could go on and on. Dependable, quiet, economical performance. Automatic operation. Over 30 gas and oilfired models, ranging from 70,000 to 420,000 BTU input and all priced right for the job.

You can get a complete, unabridged description of this part of the big KO-Z-AIRE story by simply mailing the coupon below. But the happy ending - customer satisfaction, fewer-call-backs, bigger profits — is one thing we can't describe in words. You have to experience that yourself.





70 Hi-Boy

for gas or oil



Representatives in Principal Cities



KO-Z-AIRE	PRODUCTS, Inc.	Dept.	BAA

Please send us details on the KO-Z-AIRE Hi-Boy Winter Air Conditioners plus information on the complete KO-Z-AIRE line.

NAME TITLE

CITY. STATE

# ARTISAN

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Founded 1864

Volume 89, No. 8

# RESIDENTIAL AIR CONDITIONING WARM AIR HEATING SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metais"

> EDITOR CLYDE M. BARNES

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# Syncromatic

EFFICIENCY — DURABILITY — BEAUTY



THE STATE OF THE S

GF series



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700 series



900 series

GFU series

The HI-CAP series is made of 3/16" plate welded inside and out. No hot spots. Rated capacities achieved with surface temperature under 875 F. Heat exchanger is furnished welded in one piece or in sections to go through a 36" door. Field proven — the finest of all commercial and industrial furnaces. A range of 330,000 to 1,000,000 BTU

The GFU HI-BOY is compact - smooth firing - efficient. Line firing at the factory insures perfection of operation. Heavy 12 gauge steel means years of trouble free service. Input 75,000 and 95,000.

The GF LO-BOY, for basement application. Line fired — no expansion noises, controls pre—tested. Shipped completely assembled and wired. Cuts out on the job costs. Inputs from 75,000 to 145,000.

The ''700'' is a deluxe oil furnace in appearance, efficiency and performance. Easily assembled casings. Refractories factory installed – saves on the job time – assures a perfect firing job. Three sizes 90,000 – 110,000 and 146,000 BTU at bonnet.

The "900" oil fired furnace with pre-installed refractory and standard casing is comparable in quality and efficiency with the best furnaces of other makes — a real buy! 80,000 to 108,000 BTU at bonnet.

For full information and details contact your warm air wholesaler or write

SYNCROMATIC CORPORATION

WATERTOWN

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8-5-2



### Industrial Expansion Rate Setting New Record

The country's capacity for industrial production is increasing at a record rate, and two-thirds of the expansion planned under the mobilization program is expected to be in place by the end of 1952, the Defense Production Administration has announced.

The nation's defensive strength is tied directly to its industrial capacity, according to a recent DPA bulletin. The nation will spend from \$50 to \$60 billion for new facilities to increase its industrial capacity during the four-year period ahead.

The program upon which the nation is now embarked is beset with certain physical limitations, as in cases where we are dependent upon imported materials or where it is difficult to increase domestic production of such ores as copper, nickel, and cobalt.

The program is further complicated by the necessity for international arrangements regarding imports to complete our vast requirements for certain critical materials which are in short supply.

### Copper Allotments For Third Quarter Increased

A recent statement by DPA-NPA Administrator H. H. Fowler regarding the new revisions on copper controls states in part:

The action by NPA in increasing the over-all third quarter allotments of copper by approximately 10 per cent provides American industry the authority to use its full share of international copper supplies available. This country



## the editor's notebook

- (consinued)

the world's largest copper consumer — imports roughly onethird of its refined copper."

Stating that in 1950, copper demand far exceeded the supply, reducing then-existing stocks, Fowler continued:

"In 1951 the Copper Division of NPA began allocating refined copper and scrap to the various users of such material. Civilian items had to be held to a level considerably below 50 per cent of pre-Korea basis in many cases.

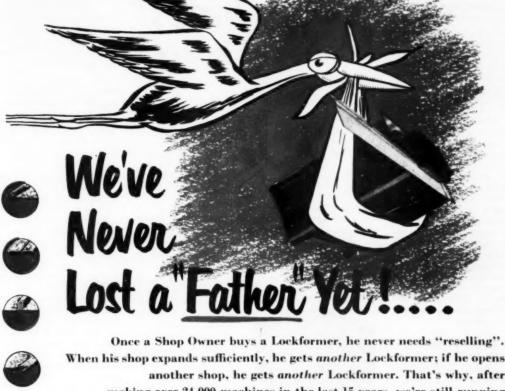
"To help maintain even this low level, it became necessary in the third quarter of 1951 to suspend stockpiling. Due to strikes in the U.S. and Chile, and other production interruptions, it became necessary to withdraw substantial quantities of copper from the stockpile."

As the United States is making the major contribution to the UN defense, it is, therefore, entitled to the major share of the world supplies of critical materials. The participating nations of the International Materials Conference recognize this fact. Since the inception of IMC in Dec. 1950, the U.S. has received permission to consume more than its normal supply of Free World copper.

Prior to this it was felt that to permit American producers of copper to purchase additional copper at present world prices in the open market and to add the additional costs to their prices, would cause high inflationary pressures on our domestic economy.

### Gas Industry to Spend \$5.6 Billion on Facilities

The nation's gas distribution and pipeline industry will spend about \$5.6 billion for construction of new facilitities and plant expansion in the five year period from 1952 through 1956, the American Gas Association has announced. This compares with construction expenditures of \$5.1 billion over the past five years, a high



When his shop expands sufficiently, he gets another Lockformer; if he opens another shop, he gets another Lockformer. That's why, after making over 24,000 machines in the last 15 years, we're still running two shifts to supply the demand!

Why this loyalty? Simply because Lockformers fulfill every claim made for them. We say they cut over-all fabrication costs in half. They do! We say they're just about "wear-out-proof". They are! Once YOU become the proud father of a new Lockformer it's a 100 to 1 shot that we'll never lose you... as a friend and as a customer. We're pretty happy about it.

Send for Your Free Copy One Man with a LOCKFORMER make of the Lockformer more Pittsburgh Locks Catalog than Sixteen Men **Eight Brakes** s dis dis dis dis dis dis dis

## FORM

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### the editor's notebook

for the gas industry. Figures are based on reports submitted to A.G.A. by companies representing over 95 per cent of total revenues of the industry.

The Association reports that despite shortages of essential pipe and other materials, the gas industry expended a record \$1,461,500,000 in 1951 for the construction of new facilities. A temporary slackening of construction during 1952 is indicated, due to allocation and material difficulties. A number of major pipelines were completed in 1951, and augmented capacity of the nation's pipeline system in 1952 will be accomplished through installation of additional compressor, rather than pipe facilitities.

The record 1951 figure for construction is expected to be broken in 1953, when estimated expenditures may total \$1,681,000,000.

### **FPC** Authorizes Pipeline to Service North Central U.S.

The Federal Power Commission has authorized Northern Natural Gas Co., Omaha, to construct new pipeline facilities designed to increase the delivery capacity of the company's natural gas transmission system from the present 600 million cu It per day to a total of 825 million cu ft. The project will supply additional gas to the firm's currently connected utility customers for resale to attached consumers as well as for service to new consumers for communities in Oklahoma, Kansas, Nebraska, Iowa, Minnesota and South Dakota.

The facilities which Northern was authorized to construct, to be located in Texas, Oklahoma, Iowa, Kansas, Nebraska, and Minnesota, include 213 miles of 26 in loop pipeline additions, and an additional 100,160 hp in compressor capacity. In addition, the firm proposes to build other facilities which it contends do not require FPC authorization, in-



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you. It simplifies ordering and handling, minimizes inventory, speeds delivery and installation and brings you added sales. You get complete in one package the furnace equipment needed for each job: furnace, burner, blower, controls, registers, pipe and accessories SUN Fuel-Master Packaged-Heat Units are

> available for homes with or without basements, with either oil or gas burners, and in capacities of 80,000 to 120,000 Btu. Write for literature and prices today.



Oil Fired Counter-Flow



### the editor's notebook

cluding gathering system, production plant, pipeline and compressor station and gasoline plant additions.

### University of Illinois **Begins Cooling Research**

An investigation of summer cooling has begun in one of the NWAHACA's Research Residences at the University of Illinois. Its purpose is to develop standards for the design and installation of summer cooling equipment.

The present work consists of a continuation of an extensive research conducted during the 1930's. Results of the early investigation can be found in the University of Illinois Engineering Experiment Station Bulletins 290, 305, and 321. One of the findings indicated that actual cooling load was less than the calculated cooling load. One of the objectives of this summer's investigation is to determine an accurate procedure for obtaining cooling loads. Another objective is to study the application of cooling with present day forced warm air duct system in the Research Residence, which was designed exclusively for heating.

According to current standard methods of figuring summer cooling, approximately twice the cfm used in heating must be circulated through the cooling coils and then through the duct system to the rooms in order to do the desired job of cooling with present day equipment. Duct systems designed for cooling are thus larger than those for heating. adding to installation costs.

The Association hopes to determine if the cost of year around air conditioning systems can be lowered by using the same duct system that is used for heating.

Summer cooling studies are more diffcult to conduct than are heating studies, since the

## ONE PRICE



4½ INCH DUCT SYSTEM





### \*Everything from register to plenum

All the material for your small-pipe installations is included in the Char-Gale package plan. Whether you choose 4-inch systems or 4½-inch systems, you get the new Char-Gale register-and-box unit as well as the plenum and all the fittings for complete installation. Both systems are complete, well engineered and easy to install. They cut material and labor costs and provide customer satisfaction.

### 40% MORE CAPACITY

By increasing the diameter of the pipes in a small pipe system from 4 inches to  $4\frac{1}{2}$  inches, Char-Gale has retained all the advantages of the smaller system, while adding more than 40% to the BTU capacity. The added capacity means more adequate handling of the furnace output, and more BTU's per run.

## AVAILABLE WITH EITHER SYSTEM! Char-Gale's NEW register unit

Char-Gale's new register-and-box unit is an integral part of the Char-Gale 4 and 4½-inch systems, and its use is vitally necessary for the proper performance of both.

The new Char-Gale register distributes heat evenly in all directions, with no drafts or blasts of hot air. It is adjustable, permitting complete balancing at the registers, and has a positive shutoff without noise.

Designed for either dry or wet wall construction, the new Char-Gale register box eliminates the need for a plaster frame. The foam rubber gasket provides a positive seal, with no leakage of air between the register and the register box.

Place orders as soon as possible to get into our production schedule.

Literature now available on both systems.

PAT PEND

CHAR-GALE MANUFACTURING COMPANY

AT. PEND

## the editor's notebook

· Icontinued

sun does not help the cooling unit as it does the heating unit; therefore the solar load must be taken into account in all studies. Lights, occupancy, etc. all work against the cooling unit.

### Madison Apprenticeship Committee Awards Prizes

The Madison Sheet Metal Apprenticeship Committee honored the winners of the local sheet metal contest at a dinner held in Madison, Wis., recently.

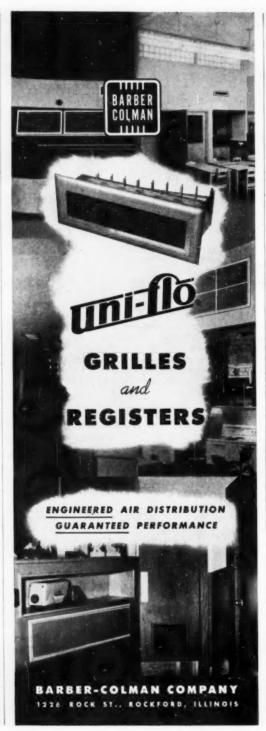
This contest is sponsored annually by the Sheet Metal Contractors Association and the Sheet Metal Workers Union, Local No. 279. The winner's project is submitted to the National Sheet Metal Contest sponsored by the above organizations. Prizes were awarded to Richard Georgeson, David Schmelzer, and Ronald Schultz, winners of first, second, and third places, respectively.

The consultants to this apprenticeship program are Fred McClain, coordinator, Madison Vocational School, and R. C. Phillips, field representative, Bureau of Apprenticeship, U. S. Department of Labor.

### Steel Safety Record High Despite Fast Shutdowns

Two emergency shutdowns of the Indiana Harbor Works of Inland Steel Co. in the last seven months without accident must not be merely taken for granted, due to the potential danger involved in closing down the giant blast furnaces, according to a recent statement by H. W. Johnson, vice president of the firm.

Shutting down the Inland plant at Indiana Harbor is equivalent to evacuating a sizeable city and shutting off all its utilities, the water works and mains, the gas plant, heating systems, electric power and light, and its transportation



## the editor's notebook

(continued)

system. The danger in fast shutdowns arises because there is neither time nor manpower to make certain that all precautions are followed.

### Controls Being Dropped by Federal Government

Due to the increasing number of controls being dropped by government planners, a buyers' market in most metals is anticipated by industry sources. Limitations in use have now been removed from lead, bismuth, cadmium, and antimony. Zinc controls are now nearly non-existent. Aluminum is expected to be free by the end of 1952. Steel allotments may also be done away with in large part before the end of the year.

### Research Stimulates New Inventions

The incentive to invent new labor-saving machines is provided by the U.S. Patent system. Since the free enterprise system of American industry has put millions of dollars into experimental research, this investment has brought dividends in the form of new inventions in the chemical, electronics and agricultural machinery fields. Production of television sets and transmitters alone has brought into being a large force of workers in a type of labor formerly non-existent. New plastics, new drugs, new methods of production have been developed and made possible by patent protection.

### Electric Heating with Radiant Glass Panels

Seminars are being conducted in New York, Chicago, Atlanta, Los Angeles and other cities during the summer of 1952 for the purpose of acquainting the heating trade with a new phase of the heating field — electric heating of homes and other buildings with radiant glass panels. The

# rue in 192

August, 1922

FUEL OIL

# Get in on the "Cream"

Oil burners for house heating are becoming more popular each day. Particularly now, when a coal shortage is inevitable, house owners are turning to oil for heat.

onare of this booming be

# B. C. OIL BURN

is unquestionably the best oil burner in existence is unquestionably the best oil burner in existence today. We say this firmly, without fear of successful contradiction. Compare its PROVEN features with the "talking points" of other burners and decide for yourself.

A. C. Oil Burner is comparatively sim It is the only oil burner that completely atomizes the oil. It uses cheaper fuel. Completely automatic. Thoroughly guaranteed. The price is

Altogether, a remarkable opportunity for live Altogether, a remarkable opportunity for live dealers to come in for the large profits attendent upon the sale of the A. B. C. Write for full par-

Automatic Burner Corporation 2309 Lincoln Avenue

Chicago, Illinois



## the editor's notebook

(continued

seminars are sponsored by Appleman Glass Works, Bergenfield, N. J., manufacturers of these units.

Purpose of the seminars is to disseminate information to those in the heating and pluming trades on the subject of radiant glass panels. Classes are now being formed and applications to the seminars are welcomed.

### Making Every Employee a Salesman

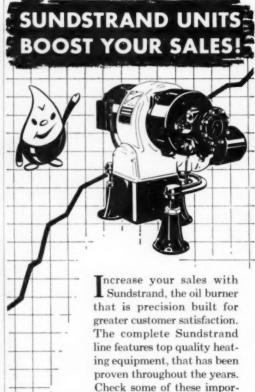
The Minneapolis-Honeywell Regulator Company recently rented an entire theater for an evening to enable 1,800 of its production and engineering personnel to have a look at the company's sales meeting.

After staging a series of successful regional meetings for the firm's 1,000 salesmen, Honeywell decided that employees, too, should be acquainted with the company's 1952 sales objectives. Thus they were invited to become "Salesmen for a Day" and to witness the sales presentation previously given to the road men.

The production had a professional touch; it included standard theater tickets, attractive usherettes, a news-magaine style of program featuring the M-H salesman as "Man of the Year", two shapely girls to change the placards announcing each event, and a huge screen behind which live "telecasts" of sales situations were made.

### FPC Asked to Authorize Off-Shore Pipeline

Washington, D. C.—United Gas Pipe Line Co., Shreveport, La., has applied to the Federal Power Commission for authority to build about 31 miles of natural gas transmission line extending from an off-shore field in the Gulf of Mexico to a connection with another pipe line now under construction by the company in Terrebonne Parish, La.



### Sundstrand OIL BURNER

ing job far easier.

tant features now-then let

Sundstrand make your sell-

- Sundstrand units are attractive, with a modern, functional design and no cumbersome extras.
- Durably constructed, Sundstrand heating units provide long wear under any conditions.
- Sundstrand units are designed for economy, with savings in initial cost and operation.
- Dependable engineering has given Sundstrand a reputation for trouble-free heating throughout the years.
- Silent operation is provided by Sundstrand's cushion-mounted motor and extra heavy housing.

A nationally-known line, with a burner for every job. For more complete information, write:

SUNDSTRAND ENGINEERING CO. ROCKFORD, ILLINOIS, U.S.A.

## the editor's notebook

fcontinued)

The proposed new line, to be of 20-in. diameter pipe, would have a capacity of 165 million cu ft of natural gas per day. Estimated cost of the project is \$4,255,800, which would be financed by the sale of securities to United's parent, United Gas Corp.

### '51 Fan and Blower Shipments up 27 Per Cent

Shipments of fans, blowers, and accessory equipment during 1951 totaled \$186 million, an increase of 27 per cent over similar shipments in 1950, according to the Bureau of the Census, Department of Commerce. Of the 1951 total, the fan and blower group of products alone accounted for \$122 million. booked for all items combined amounted to \$202 million in 1951, an increase of 18 per cent over orders booked for the preceding year.

The new summary contains statistics for the four quarters of 1951 and 1950 and incorporates all of the revisions in this series compiled for these years, thus providing a single reference copy to replace the quarterly release. During 1951, shipments of fans, blowers, and accessory equipment were reported by 217 firms representing all known producers of the types of equipment covered in this release.

### Iron Ore Mined beneath Ocean Bed

Iron ore is being mined beneath the Atlantic Ocean more than two miles from shore, near Bell Island, Newfoundland, according to American Iron and Steel Institute, A system of belt conveyors is being installed to help bring the ore from beneath the ocean bed to the surface of the island. The equipment will be able to lift 1,000 tons of ore per hour from a depth of 1,730 feet. This Wabana Mine is expected to supply 2,800,000 tons of ore in 1952.



# The ONLY COMPLETE LINE OF PERIMETER HEATING DIFFUSERS!



### SIDEWALL INSTALLATION

H&C No. 40 is the only really practical sidewall diffuser on the market. Provides 180° spread of warm air to blanket cold wall area, with just except warm air defected to the floor. It's exceptionally low in resistance and has positive means of balancing system at register face. Eliminates necessity of cutting floor coverings. Sealed against streaking.



### FLOOR INSTALLATION

The No. 411 is definitely superior to other diffusers in this class. It has opposed louvers (in all but the 2½ width) for undistorted airflow, regardless of valume; quick, pealtive volume control for balancing at the face; curved diffusion vanes for ideal air pattern; foot-operated, trouble-free value control.



The H&C fine of diffusers is the only one that gives unrestricted scope to perimeter heating — unrestricted choice of installation type to the customer. Floor, Sidewall or Out-of-Wall, whichever is preferred or is best suited to any given condition. Moreover, H&C diffusers are definitely superior in performance; scientifically engineered to provide the very maximum results in this new and rapidly growing division of warm air heating; and right up to the unmarched H&C standard of fine appearance, quality construction and workmanship. See them at your H&C Jobber or consult our current catalog No. 52 for complete details and engineering data.



### OUT-OF-WALL INSTALLATIONS

The HAC No. 4 Frame with No. 40 See in Diffuse is part of for installations where solid memory well are assentered or it is not desired to place docts in the unit solid our sected qualitative kings. Provided with as the

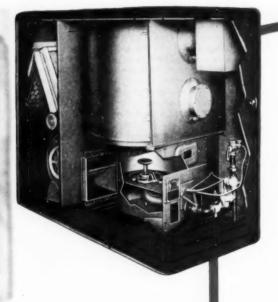
HART & COOLEY MANUFACTURING CO.

500 EAST EIGHTH ST., HOLLAND, MICH.

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Fort Crie, Ontario

WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

# a Good Living ... with Waterbury



Waterbury Dealers find that association with Waterman-Waterbury is good business. With Waterbury units fired by coal, oil or gas, and in sizes to fit every home, they are able to handle any warm air installation. This gives Waterbury Dealers a wide selection of prospects . . . prospects already sold on Waterbury quality through national advertising and the testimony of their friends. These factors combine to build a strong business and provide a good living.

"It's what's

<u>under</u> the casing

that counts!"

Waterbury AIR CONDITIONERS, GAS CONVERSION BURNERS

# A Good Life"...

More than a good living is involved in a Waterbury Dealership. There is the satisfaction of selling a quality product and matching that product with a quality installation. There is the joy of friendship with satisfied customers. There is the security of a sound dealer-distributor-factory relationship. And there is the knowledge that every Waterbury Dealer can plan on continued Waterbury development. Yes, a Waterbury Dealer can expect a "good life" with Waterbury.





The Waterman-Waterbury Co.

OVER 45 YEARS OF WARM AIR HEATING

1122 Jackson Street, N. E. Minneapolis 13, Minnesote

# A Deluxe Unit... for your customers who

# the gas fired MOHAWK WINTER AIR CONDITIONER by American-Standard

In the field of warm air heating equipment, the Mohawk winter air conditioner is tops. It's a quality product through and through.

Made of cast iron for extra durability, longer life and quieter operation, the Mohawk is available in eight sizes with capacities ranging from 80,000 to 300,000 Btu input per hour. High temperature alloy ribbon burner burns natural, manu-

factured, mixed, liquefied petroleum and LP-air gas uniformly and sparingly.

The handsome jacket is a real eye-catcher on your sales floor and enhances any basement setting. For detailed information on this deluxe unit and other gas fired winter air conditioners in the American-Standard line, contact your wholesale distributor.



### right for small, medium and large homes

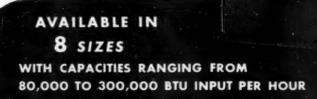
In every community there are always many home owners who will buy nothing less than the best! And you can sell them all! For the Mohawk is available in sizes and models for any home, whether large or small. Selling modernization jobs to this type of buyer is a big market in itself. The picture shows such a job made in a large Pennsylvania home by Bell Plumbing & Heating Co.

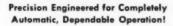


### and for multiple installations

You'll also find it comparatively easy to sell your share of multiple installations such as the apartment house job shown at the left. This particular installation involved the sale of five Mohawk winter air conditioners in a 25-room apartment building in Omaha, Nebraska, by Gordon Furnace and Sheet Metal Works. Every community offers numerous opportunities for jobs similar to this.

### want the best!





- jacket smooth Forge Red hammer finish rounded corners—rigid slip joint construction high temperature aluminum finish inside—inner liner reduces heat loss.
- heating element—cast iron resists action of burned gases—surface ground joints sealed with asbestos wick gasket — leakproof — baffled to heat entire surface uniformly.
- cleanout—easy to inspect and clean flue passages.
   controls—finest quality for completely automatic operation automatic pilot valve for each element—100% shut-off for LP-gas and LP-air gas.
- burner—cast iron body—patented high temperature alloy corrugated ribbons—quiet and efficient.
   blower quiet double inlet type rubber
- mounted. Self-aligning bearings—easily adjusted for continuous air circulation.

  7. motor—rubber mounted—overload protected adjustable pulley—will not cause radio or televi-
- adjustable pulley—will not cause radio or television interference.

  8. radiation shield—at sides and between each heat-
- ing element provides extra heating surface minimizes heat loss.
- filters—clean the air effectively—easily and inexpensively replaced.
- draft hood—built in—conserves space—regulates normal draft—protects against down draft.
- 11. pre-heated air—return air is drawn over hot flue surfaces—saves fuel—increases efficiency.



American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

American-Standard



Serving home and industry

AMERICAN-STANDARD · AMERICAN BLOWER · CHURCH SEATS · DETROIT LUBRICATOR · KEWANEE BOILERS · ROSS HEATER · TONAWANDA IRON



## Keeping Milk Sweet Can Be a Sour Chore

Not too many years ago a dairy farmer was considered fortunate if he had a spring branch on his property. Carrying the milk or cream to the spring house was added labor, but nature provided the necessary cooling agent. Now, any farmer who has electric power may own the efficient year-'round convenience of a modern milk cooler.

Emerson-Electric motors power many of the electrical applications that have supplanted wasteful methods and time-consuming farm chores. The farmer is often many miles away from the nearest repair specialist, therefore he rates dependability first when buying

equipment. And dependable performance is the first consideration of the makers of Emerson-Electric motors—built to give more service with less servicing.

Emerson-Electric's 62 years of experience in the manufacture of dependable motors is helping to build sales for makers of products and appliances used on the farm, in the home, in business and in industry. For information on this complete standard motor line in horsepower ratings from 1/20 to 5, and hermetic motors ½s to 15 h. p., write:

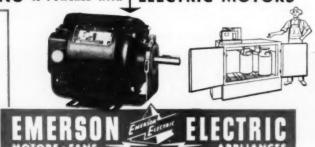
THE EMERSON ELECTRIC MFG. CO., St. Louis 21, Ma.

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EMERSON-ELECTRIC MOTORS For Belted Fans and Blowers



These motors incorporate all the electrical and mechanical specifications best suited for this service. Split-phase motors, available in ½, ¼, and ½, b, p., with resilient mountings and automatic reset thermal protectors. For complete data write for Motor Bulletin No.M128.



LEADERS IN THE MOTOR AND FAN INDUSTRY SINCE 1890

# News Round-Up

### Outlook Good for Second Half of 1952

FACTORS THAT MAY be expected to affect business operation and volume during the next few months have been enumerated by the Economic Research Department of the Chamber of Commerce of the United States.

Generally, the report states, it appears to economists as if the balance of 1952 will be good, at least as good as the first half, and possibly better for some of the industries that have been lagging. The general trend appears that it will carry over into 1953.

Gross national product of goods and services has risen from \$320 billion to \$340 billion, although the general price level within that period has remained practically stable; thus, the increase has been in actual volume.

Civilian employment compares almost with that of the same period in 1951 — approximately 61.2 million. Unemployment is set at 1.6 million, which is regarded as low. Private construction is at the rate of about \$53 billion, or about 88 per cent of the 1951 figure. New plant equipment, however, is on the increase.

The National Defense Program is now on a definite increase, without seriously affecting the civilian economy. The administration expects that defense spending will attain the annual rate of \$60 billion by December. Chamber of Commerce economists believe that it may not reach that amount.

Total American business inventories are estimated at above \$70 billion, probably an all time high. Retail inventories, however, have decreased.

The national income rose from \$269 billion for the first quarter of 1951 to \$282 billion for the same period this year. Personal incomes are estimated at around \$260 billion annually. Despite an increase in personal incomes, consumption has not grown at a corresponding rate, indicating less retail buying and increased personal savings.

It is believed that the federal budget deficit will increase; how the deficit will be financed is important. If it is to be done through the medium of personal savings, it will not create the inflationary pressures that come with bond sales to commercial banks.

Looking at the situation on an overall basis, Chamber of Commerce economists predict a population increase of 23 million in the present decade, as compared to 19 million in the 1940's. A further encouraging factor is the expansion in industrial research, new products, and product development to mass markets. Three industries — oil, chemicals and electric power — have plans for great expansion. One recent estimate predicts a doubling of power production within the next ten years.

### **Heating Men Go Back To School**

A two-day course is being offered to installation and service men in the dealer organization at Conco Engineering Works, Mendota, Ill. The curriculum covers the installation, maintenance and servicing of Conco equipment, and acquaints the men with new changes and developments in the company's products.

Classes are limited to 24, under the direction of James Wells, who conceived the idea of the Conco Service School. The comparatively small classes permit individual instruction to be given as well as group discussions. In addition to lectures by company staff engineers, the men attending the sessions are each given a set of tools and are required to tear down and rebuild furnaces and burners, while performing all common adjustments, replacements, and service details.

A majority of their time is spent by the service men in actual manual work, which is carefully checked as they go along. The course ends with a written examination of 40 questions covering all points of the session.

In recent months over 100 men have attended the school. The course is of great potential practical value, since it insures greater consumer satisfaction for the firm's products.

#### **Guard Against Moisture in Basementless Houses**

An estimated 60 per cent of the one-story houses which were erected in 1951 were built without basements— in a year when the proportion of single-story houses over two-story houses was the largest yet recorded.

Housing experts have voiced a precaution to families who live in basementless homes. They warn that the crawl space must be kept as dry as possible, either by surfacing the bare ground with waterproof concrete, covering it with 55-lb roll roofing, lapped 3 in., or by some other method that will shut off the water vapor that rises from damp earth.

It is generally supposed that a saving can be made by

## News Round-Up



not insulating when the crawl space is used as the plenum for warm air heating systems. This is not so, as proper insulating is more important than ever in these cases.

### Small Pipe System Not Necessarily High Velocity

CONTRARY TO THE ACCEPTED principles of Continuous Air Circulation, some members of the heating industry have been under the impression that "small pipe systems" imply "high velocities", according to a recent release by the National Warm Air Heating and Air Conditioning Association.

The statement is not necessarily true. Since there is no exact agreement among heating men as to a limiting velocity below which a system is a "low" velocity type and above which it becomes a "high" velocity system, the expression "high velocity system" becomes indefinite, due to the possible overlapping of terms.

At the NWAHACA 1952 Indoor Comfort Conferences, the majority in attendance represent the progressives among heating men in their communities, thus their opinions are well worth considering. Among these dealers, a marked change has been noted in the past few years in their opinions of the dividing line between low and high velocity systems. As recently as five years ago, many of them were inclined to label as "high velocity" any duct system in residence heating where the air velocities in the ducts were above 700 to 800 fpm.

At a number of the Conferences this year, the question was asked, "At what air velocity in the ducts, do you consider that a system has become a high velocity type?" The majority replied in substance, "In a residential system, any velocity higher than 1,000 fpm." This answer does not, of itself, imply favor or disapproval of such systems on the part of those who expressed their opinion, but it does indicate the trend toward the change in opinions as to the limiting velocity which divides the two types. It has been raised from approximately 750 fpm to about 1,000 fpm within the past five years. This concept is also reflected in the 1952 Heating, Ventilating and Air Conditioning Guide, which states that for residential use, velocities should not exceed 1,200 fpm in the main ducts, 1,000 fpm in the branch ducts, or 800 fpm in the risers.

#### **Another Project Offers Year 'Round Comfort**

EACH HOUSE IN a new 76-unit project in Dallas will be completely air conditioned. This is the third large development in that city in 1952 to feature year 'round air conditioning, it is announced by Modernaire Construction Co.

Summer cooling will be provided by a 3-ton packaged residential air conditioner. Heating in winter will be by a gas fired warm air furnace. A single air duct system will be used to distribute air to each room. The houses, of brick veneer exteriors, will have six rooms each. The first are expected to be ready by August, and sell for \$18,000.

### Additional Award Set Up For Employee Inventors

A NEW PROGRAM to provide additional employee awards for meritorious inventions has been announced by Westinghouse Electric Corp. Patent Disclosure Committees in the various company divisions will administer the new program which is designed to provide further incentive for inventors. The new policy is called the "Most Meritorious Disclosure Award."

The new award was set up for the further increase of the stimulating effect of the firm's voluntary invention award plan. This increases to four Westinghouse's employee awards for useful inventions.

### Ingersoll Products Installs Electric Steel Melting Furnaces

Two New 18-ton capacity electric steel melting furnaces for the Chicago plant of Ingersoll Products Division of Borg-Warner Corporation are under installation. The new building to house the furnaces will be 460 ft long and 80 ft wide. A complete new power distribution system will be installed to furnish 12,000 volts for operation of the furnaces, necessitating a separate power line from a nearby substation to insure an adequate supply of electric power.

Fumes and dust from the furnaces will be eliminated by an electrostatic type dust collector. Ingersoll is one of the first companies in the country to arrange for installation of this type of system in connection with electric furnaces. The firm will spend approximately \$85,000 for this equipment, which is guaranteed to remove 95 per cent of all fumes and smoke and to keep the surrounding area twice as clean as the city's smoke regulations require.

#### Fan Manufacturers New Officers

At the thirty-fifth annual meeting the National Association of Fan Manufacturers, Inc. the following officers were elected: R. A. Wasson, Clarage Fan Co., president, J. M. Frank, Ilg Electric Ventilating Co., vice president, L. O. Monroe, secretary-treasurer.

## NEW! Vertical Steel - Oil-Fired Winter Air Conditioner by RICHMOND

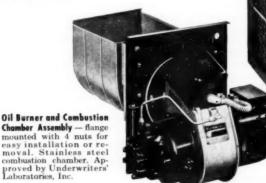
Here's a new and wanted addition to Richmond's line of winter air conditioners . . . giving you a still wider selection of quality heating units.

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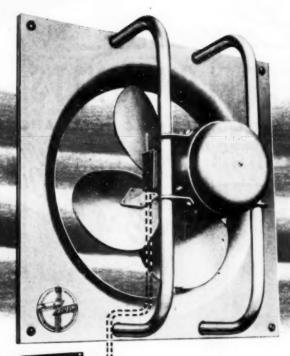




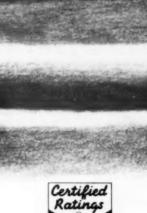
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## The Two Candidates

The business of government is implemented by the officials who are elected by the people. These officials are the conspicuous parts of the vast human machine that comprises Government. But the real operators of the machine of the Federal Government probably do not exceed two or three hundred persons about whom you and I know very little. They are men — and probably some women — like Jack Arvey, the Chicago Democrat boss; and the bosses of politics familiar to the people of New York, Miami, New Orleans, Los Angeles, San Francisco and other major centers of the United States. It is essential to get this idea, particularly in relation to Democratic politics, if you wish to understand what makes national conventions tick, and what is behind the candidates they select.

#### Democrat-vs-Republican Politics Contrasted

Fundamentally, there is no difference between the fact of the machines that operate the Democratic politics and the Republican politics. But in many essential details the Republican machine is different from the Democratic machine. At least in these days, the Republican machine does not have the same sort of bosses as those who are identified with the Democrats. The Republican instrument still is in the hands of business men, bankers, and men who are not like many of the Democratic political operators.

There are, of course, idealists and patriots in both groups; but the majority, on both sides, are hard, cold, realists with an eye constantly on the profits of the operation. These profits range from easy money to advantages of all sorts, including the so-called fame and glory that go with some great public offices.

This writer, in the July AMERICAN ARTISAN, pointed out that Governor Stevenson is the darling of the city bosses. We defined them as the element who control the Democratic Party, and as the dominant influence, largely, over the business people who get favors from the Federal Government. In the welter of candidates, and the sharp contrast of their qualifications, it was a puzzle how they could put over Governor Stevenson, who was virtually

unknown to most of the rest of the country, and who apparently declined to allow anyone to make an active campaign in his behalf.

### Governor Adlai Stevenson of Illinois

However, the selection of Stevenson is no mystery to those who have a sense of politics, and a knowledge of the operation of the machine of Government. There are those who sincerely believe that the pre-convention relationship of Stevenson to the nomination was a most astutely planned approach. They think his refusal of the crown really was designed to save campaign money, to avoid obligations to anyone, and to enable him to step into the Presidency utterly uncommitted to any person or any group. This belief makes a good story but it isn't true. There is no remote doubt that Stevenson was most skillfully handled by those who were employed by the city bosses.

It should be remembered Stevenson comes from the sort of stock which is the component of that group in America which can be called its very real aristocracy. His great grandfather, politically, financially and otherwise, was a supporter of Abraham Lincoln. His grandfather, after whom he is named, was Vice President in the second Grover Cleveland administration. His father was Secretary of State of Illinois. The family has had wealth for at least four generations, and wealth usually brings gracious living and cultured minds. Stevenson was brought up in that atmosphere. It was an atmosphere that had been common to preceding generations of his family. It is the sort of atmosphere that separates (and particularly separated people of Stevenson's generation) from those who did not have the same advantages. In the days of Stevenson's sheltered boyhood. youngsters arbitrarily classified other boys as gentlemen or muckers. It is important to clarify this background because it explains Stevenson and those things which have made him so bewilderingly puzzling. In his early youth he learned French in Switzerland; he got his prep school conditioning at the most fashionable Eastern institutions for the sons of the rich. He received his





## Washington Setter

degree at Princeton, studied law at Harvard and Northwestern, and had almost two years of experimentation with newspaper work on the paper owned by the family, the Daily Pantagraph, at the family home, Bloomington, Illinois. But bear in mind, his was always more or less the attitude of the dilettante. While such chosen people do not exactly live in an ivory tower, they have many of the qualities which are associated with those scholarly gentlemen who live aloof and fastidiously on an eminence above the common run.

### Stevenson's Background in Public Life

Stevenson practiced law but soon got out of it. He entered into the early phases of the New Deal with Wallace, and later became Special Assistant to Frank Knox, Secretary of the Navy. He headed an economic mission to Italy. After the Second World War he spent a little time in the State Department. Seven or eight years ago, for a year or so, he was one of our delegates to the United Nations General Assembly. It is a curious fact that he was first thrust upon the notice of Arvey, Chicago's boss, by the then Secretary of State, James F. Byrnes, now Governor of South Carolina. Byrnes had discovered that the intellectually restless Stevenson had a hankering for some sort of political life, since it was consistent with the family traditions, and with his own very genuine liking for people, and the affairs of people. In 1948, Arvey had him nominated on the Democratic ticket for the governorship of Illinois, and the conjunction of the Arvey political machine and the Stevenson ability to sell himself popularly, caused him to be elected by the record vote of 600,000 ballots. He was the first Democrat in history to carry the farming areas of Illinois. It was Stevenson's popularity that saved Truman in Illinois. Truman had a plurality of only 34,000,

Stevenson, as Governor, has been the proverbial new broom. The boss has allowed him to clean up some of the political corruption of Illinois, to kick out gamblers, to broaden civil service, to reorganize many phases of the state government, and to modernize some of the welfare services. He is said to be excessively punctual, and follows the habits of his class in being proficient in almost all sports. He has an Eastern accent, a resonant, appealing voice, smiles easily and pleasantly, and requires no tricks to get over on the radio and television. His persuasive, self-written speeches, with all the other attributes, are making him known as the best orator of our day.

### What Stevenson Represents

The key to the long uncertainty about the Stevenson attitude towards the proffered chance to become President, undoubtedly is his fundamental fastidiousness, which brings with it a shyness that is not so much perceptible, as it conditions every approach to the problems of life. It is certain that Stevenson was utterly sincere when he said he approached the fact of his nomination with complete humility. He appears to have felt that he lacked the experience, and the rough and tumble equipment for the job. Bear in mind, Stevenson never has been really blended with the ordinary; and probably never will be quite able to orient himself in the stream of common life. He will always be affected by that singular uncertainty which makes him appear unable to decide with the swift sureness of more autocratic natures.

The liberals regard him as one of their kind. It was the liberal coalition that superficially put over his candidacy. There are reasons to feel, however, that the liberals may find themselves badly in error. Every instinct and quality in Stevenson will make him increasingly conservative. His very short record of liberalism is perfectly natural. It is the revolt of the fresh younger mind and nature against the static qualities of tradition. It is almost inevitable and invariable that a man with the background of Stevenson should become conservative. If he becomes President, his natural inclination will be against subsidies and controls. He will probably not like welfare statism. He should be an instinctive state's righter. He has declared for the Democratic civil rights program. Apparently he thinks housing should be privately built but that Government should supply the funds and the direction. He says he is against socialized medicine and socialized insurance. If what he has been allowed to do in Illinois is an indication of what he may do in the Federal Government, he will go after the crooks. He is in utter agreement with the foreign policy of the last twenty years. He thinks Korea was not a mistake. He thinks we are perfectly right to maintain military forces in Europe. Asia he regards as more susceptible to moral authority than to military force. He wouldn't accept Red China into the United Nations. Stevenson thinks we must be very careful to avoid an Asiatic war.

The question is, of course, will those who manipulate him allow him to do those forthright things he has in mind. It should be clear that a man like Stevenson

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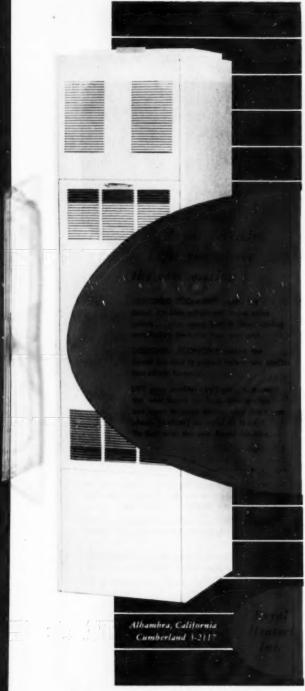
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is personally incorruptible. No one would be able to bribe him directly with any preferment of power or glory, or in any other manner that humans are corrupted. The Stevenson weakness is his own tendency to try to determine the ancient problem which engaged the sages at Nice many centuries ago, the question about how many angels can dance on the point of a needle. This predilection to look upon all sides of the question. to try to find the difference between tweedledee and tweedledum, makes a man like Stevenson peculiarly susceptible to the insidious and indirect influences of such skillful operators as the city bosses. They choose men like Stevenson because they have the uncanny perception of this weakness and they have the superskill of turning it to their advantage. It is for this reason that one finds men like Stevenson sometimes doing amazing things which cannot be reconciled with the obvious integrity of their character.

### General Dwight D. Eisenhower

Stevenson has a personality that might be likened to a highly polished and finished slender supple blade. It bends many ways but is unbreakable. On the other hand, a man like Sisenhower can be likened to a fairly polished club or bludgeon. In contrast to the velvetencased rapier-like Stevenson, Eisenhower comes from a small western town and has known the trudging monotony of following a plow. Eisenhower's sturdy background is that of a farm family whose members were ambitious to make their way to achieve places like those attained by the family of Stevenson. Both come of that fine stock which makes typical Americans. The difference is in the degree to which they have been refined in the best sense of the word. Eisenhower went away to school at West Point to submit to the rigid processes of becoming an efficient and reliable officer. It is a hard discipline which produces results much like those accomplished on finely-machined materials. Most of his life Eisenhower has been accustomed to the attrition of the requirement to obey superior command. Moreover. Eisenhower also is a warm-hearted man with a great predilection for friendship and a sense of obligation to those who do him favors and to those who have reason to expect his good will. All this produces an ingrained tendency to compliance, particularly with the desires of those to whom the person thus conditioned is partial. It is unquestionably true that a man who has spent a lifetime under orders cannot divest himself of the instinct to take orders from those whom he regards as entitled to give him the orders.

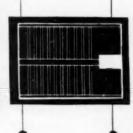
It is no secret the pre-convention campaign which nominated Eisenhower was largely financed by persons whose names are identified with the Committee for Economic Development. This is in no sense a reflection upon the Committee nor upon those who supplied the funds. They naturally belong to that economic group of business men, bankers, and industrialists who are the very backbone of the Republican party. And it is log-



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ical, if their further efforts and contributions are consummated by the actual election of Eisenhower, that they should have a dominant influence on the plan and program of the Government.

### Differences Between Contrasting Liberals

Fundamentally there is no difference between the ultimate objectives of the liberal Democrats and the liberal Republicans. The difference is in the system used to accomplish the end. The liberal Democrats would develop the welfare state, the socialist ideology, both of which are not communism but are an ardent belief in the practice of community cooperation under authority. Although they may not state it in precise words, they hold, in essence, that the greater good of the mass is superior to the claims of the individual. The liberal Republicans apparently have a philosophy that is analogous to fascism, while it is not fascism. In this philosophy the State is everything and the individual virtually nothing. Both liberal groups are agreed on the need for the establishment of ultimate authority, beneficently and paternally, to guide the State. In the ultimate reaches of Republican liberalism, you find an idea something like this: Leave all the institutions of Government as they are defined in the Constitution. But refine he Congress so that instead of taking your representatives geographically, according to population, from every level of the citizenry, choose the members of Congress from the professions, from the various categories of industry, from the various classes of labor, and from all groups which constitute the human working machinery of skills and expertness in the nation. They would eventually establish a cabinet for the President which would represent these divisions of human specialties: and they sincerely believe the best way to organize the functional machine of the economy is to permit the primary industries to cartelize, or to become the great fundamental monopolies. These great monopolies would naturally, with the consent of Government, fix their own production methods, volume, prices, but would expect all business in the next lower levels down to the retailer to operate competitively without many controls or restrictions. Obviously this still is almost purely theory. It is interesting to contemplate.

#### Eisenhower Platform Planks

Meanwhile, what does Eisenhower stand for if he is elected? Labor leaders apparently realize they will not have the influence at the White House they have had for the last twenty years. They will get a ready hearing but they will not be treated with the extreme partiality with which we are now familiar. And, per contra, Eisenhower will have a great deal more respect, and give a great deal more attention to, business men. He will not regard profits as something evil. He will be partial to anything that will encourage competition, within the limitations of whatever the necessities may be. It is

(Please turn to page 157)

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First, they are designed to do an adequate job, provide humidity 24 hours a day. Second, they are designed to stand up under all water conditions. Pans and float chambers are vitreous enameled steel. Floats are blown glass—corrosion resisting materials are used throughout. Third, they are designed for easy installation, You can install one in 40 minutes or less.

You can depend on Skuttle Humidifiers to please your customers, to sell easily and in profitable volume.

SKUTTLE SERIES 600 HUMIDIFIER (Patents Pending)
Self-flushing, self-cleaning, self-draining, Skuttle Series
600 holds 5 to 20 evaporating plates—adequate
for oil or gas fired warm air furnaces or winter air
conditioning plants up to 180,000 BTU.

Adjustable bracket permits easy installation in straight or sloped plenum. Flush lever provides automatic cleaning.



#### SKUTTLE SERIES 300 HUMIDIFIER

Holds up to 40 evaporating plates. For large homes.

### SKUTTLE SERIES 500 HUMIDIFIER

Pan type, without plates. For coal fired warm air furnaces.



### **VAPOGLAS EVAPORATING PLATES (Patented)**

The best plates obtainable. Made of glass fiber, compressed after heating. Absorbs 70% more water, pound for pound than any other type plate.

Skuttle Humidifiers are sold through recognized jobbers.



### For Better Selling

Skuttle Humidiflers are extensively advertised in daily papers in season,

In addition we offer you:

Consumer Folder "The Story Of Humidity"—Complete
—attractive—powerful convincers for your prospects.

Counter or Window Display—Hard hitting—printed in the wonderful new "Day-glo" color.

Sales Manual—with complete sales program,

Attractive Decal for Your Door or Window.

Vapoglas Plute Dispenser and a Colorful, Attractive Counter Display.

See your jobber about Skuttle Humidifiers. Selling them is profitable, satisfactory.



NUFACTURING COMPANY
BEAUFAIT AVE. • DETROIT 7, MICH.

## You can't do business



## from an empty wagon

See your wholesaler <u>now</u>...

Stock up on Honeywell Controls...

Be prepared for the busy season ahead!

The manufacturers of heating equipment are planning for another big heating season this fall.

The time to whip your business into shape to take advantage of it is right now-today. Begin by taking a quick check of your stock on the vital Honeywell controls you will need this fall. Then place an order with your regular supplier to bring your stocks up to par.

You know, your wholesaler makes a special effort to serve you at this time of the year. He's ready to help you get more business. You'll find a complete line of Honeywell controls on his shelves, covering every possible control application you'll come across this season.

Be prepared. Don't risk losing sales or having to make "one item" trips later, when your time is valuable.

Just like the Yankee peddler found out, you can't do business from an empty wagon.

## Honeywell

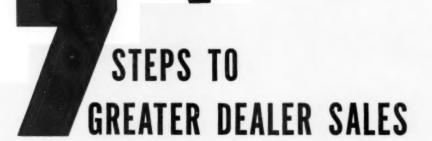
First in Controls





# Available Now!

Honeywell's sensational new merchandising plan for heating dealers





A series of 7 brilliant new booklets written to help you build a more profitable business Minneapolis-Honeywell, First in Controls, now offers you

## STEPS TO GREATER DEALER SALES

A program packed with money-making ideas for you . . . no matter where your business is located . . . no matter how large or how small it may be!

NOT JUST WHAT TO DO BUT HOW TO DO IT!

SALESMAN

Here is a master course in modern merchandising! It's complete . . . seven booklets with a total of 180 illustrated pages plus supplementary material . . . tells everything . . . how to build a sales force . . . how to sell . . . and covers every significant angle of advertising, display, and public relations for the heating man!

Each book in the 7 Steps tells you, and shows you, with practical illustrations, how you can improve your store and business. It's down-to-earth and founded on proven sales principles. No tricks, no theories, no gimmicks! It tells you and then shows you how.

### Business-building Ideas Gleaned from the Entire Industry

For help in preparing this dynamic program for you, Honeywell went to manufacturers, wholesalers, trade journals and heating experts. We wanted to give you the most authentic and most complete merchandising reference ever offered the industry . . . and here it is!

Take a brief glance at the complete subjects covered in the program. Every book is packed with information and ideas for you on how to make more money in the heating business!

Making every employee a SALESMAN

Do you know that literally everyone in your business can help boost sales? This book tells you how to select and prepare your salesmen for more sales, more profits. How to plan sales and "size-up" customers. How to close a sale—and why a convincing demonstration beats 1,000 words, every time!

#### Every booklet talks your language-every vital word and picture is about YOUR BUSINESS!



Building Business Through PERSONAL CONTACT. Do you know what to say to a new prospect? . . how to solicit business on the 'phone? . . . how to upgrade sales? Here are actual word-for-word examples.



Selling through EFFECTIVE
ADVERTISING. Here are answers for you on why, where and how much you should advertise . . how much you should append . . what you should say. It's complete.



Bringing in Customers by MAIL. Do you know how to promote business by mail? . . . what to send? . . . what to say? . . . how to get printing done? . . . what to do about mailing lists? Here's help with proved ideas.



Futting on a GOOD FRONT
This book tells—and shows you—
how to "dress up" your business,
how to improve the appearance of
your store front, trucks, salesmen,
how to look and be successful



Using DISPLAYS to Sell
Here is expert information on displays for the heating dealer. How
to use counter, windows, walls—
and showmanship—to best advantage to attract more customers.



Keeping the public SOLB on you How does your company rate in your community? Are you glad that people talk? This book tells you how to make good impressions and how to get favorable publicity.



Printed on full 8½ x11" easy-to-read pages

and look at this special offer





All 7 booklets...handsomely cased...only \$300

Here, for only \$3.00, is one of the greatest business aids ever offered to heating men anywhere.

You will receive the complete program in this strong, two-section cardboard case, suitable for keeping in your office as a permanent piece of your business equipment.



# Act now!

order yours today

#### PLUS! 5 extra booklets

Besides the complete seven-booklet program, you also receive five additional booklets containing valuable supplementary information on sales promotion. These booklets feature displays, prizes, gift material, prospect information, and business aids for your personal use.

- 1 "PRIZES FOR EVERYONE" (prepared by Cappel-MacDonald and Co.) shows sales premiums and how to use them to stimulate the efforts of your salesmen.
- 2. "DISPLAY MATERIALS CATALOG" (prepared by Reyburn's) will help you secure and use reasonably priced trims and decorations for dressing up your store for Fall, Christmas, Spring, etc.
- 3. "REMEMBRANCE ADVERTISING" (prepared by Brown & Bigelow) tells you about and illustrates give-aways, consumer premiums, and incentive awards.
- 4. "DODGE REPORTS"—a specially prepared folder on how to get and use the famous F. W. Dodge Reports which give you early leads on new construction being planned in your locality.
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Just call your order in to either your regular heating control supplier or to the local Honeywell office, or, if you prefer, fill in coupon below.

Enclosed is my check for \$3.00, please send me postpaid the "7 Steps" program as described above.

Please send me postpaid the "7 Steps" program as described above. Bill me \$3.00.

YOUR NAME.....

PIRM NAME.

Fill out and send to Merchandising Division,
Minneapolis-Honeywell Regulator Co., Minneapolis 8, Minn., today!

Honeywell

First in Controls



MINNEAPOLIS 8, MINNESOTA



# "Customer reaction clinched the No.1 performance spot for this unit"

says P. W. McCoy,

Bryant-McCoy Company, Inc., Jamestown, N. Y.

It's too easy these days to make claims about any product. And it's mighty tempting to cut prices at the expense of quality, too. Personally, I judge heating equipment strictly on performance and the reactions I get from my customers. In the case of the Bryant Forced Warm-Air Furnace, customer reaction has certainly proved this unit is the star in its field. Actually this isn't any surprise at all, because the basic engineering and construction that have been put into the Bryant Model 87 have produced advantages that are unsurpassed in any other warm-air unit. Consider, for example, the enviable record for reliability and economical operation that Bryant Controls and Automatic Pilot have built up. And don't forget the Bryant Hevigage (12-gauge steel) heat exchanger . . . rugged . . . designed for the fastest and most efficient heat transfer. Almost three times thicker than minimum AGA requirements, too. If you're not already acquainted with the features and performance of this popular Bryant unit why not get a firsthand story from some Bryant customers. Or write Bryant Heater direct for complete information. Bryant Heater Division, Dept. 16, Affiliated Gas Equipment, Inc., 17825 St. Clair Ave., Cleveland, Ohio.





AIR CONDITIONING,

WATER HEATING

# Get these Two >>> Profit Makers



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### Now in good supply at Ryerson

You'll find plenty of extra profit opportunities in the use of both Ryex expanded metal and restriction-free straight Chrome stainless. These adaptable metals are on hand for quick shipment at your nearby Ryerson plant. Neither require special tools or equipment.

Ryex expanded metal is perfectly suited to a wide variety of sheet metal shopwork. It's easy to fabricate. And, because all sharp edges are positively removed, it's easy to handle.

For jobs that call for resistance to mild corrosion, contamination or oxidation, straight Chrome stainless can often be substituted for hard-to-get nickel-bearing types. And it's readily available in the right shape, gauge and finish for your needs. So call us for straight Chrome stainless or expanded metal—for any steel requirement. We'll make every effort to serve you promptly.

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# ARTISAN

# Are You Ready for Curtain Wall Construction?

CURTAIN WALL CONSTRUCTION has received considerable attention in the last few months with the announcement in Pittsburgh that the Gateway Center project is to consist of eight skyscrapers, all with stainless steel exteriors. This group of buildings will be located down at the "Point" and is in addition to the other two towering office buildings further uptown, the United States Steel Building, also using stainless steel, and the Aluminum Company of America Building, constructed from aluminum panels. These ten huge buildings are to be the proving ground for future skyscrapers to be built throughout the nation.

Curtain wall construction offers many advantages to the builder; it provides a means of obtaining thinner walls than ever before possible, thus giving more square feet of floor area than thick masonry construction; the building can be erected at a faster rate than any other method known; overall first costs are reduced; and the building is safer to erect, as all fastening is done from the inside of the build-

ing.

Recently the Sheet Metal Workers International Association and the International Association of Bridge, Structural and Ornamental Iron Workers reached an agreement as to which union would have jurisdiction over the erecting of curtain wall panels. To quote the agreement:

"The installation of all ferrous, non-ferrous, and/ or protected metal corrugated sheeting 5 in. or less between centers of corrugation on steel frame construction, shall be the work of the Iron Workers.

"All other ferrous, non-ferrous, and/or protected metal sheeting, corrugated or otherwise, flat stamped, formed in brake, or rolled, where corrugations are over 5 in. centers, when fastened to steel, masonry or wood construction, shall be the work of the Sheet Metal Workers."

This means that the sheet metal contractor can fabricate right in his own shop the curtain wall panels and use his sheet metal men to erect them on the job. The field open to this type of construction seems unlimited — in addition to office buildings, corner filling stations, shopping centers, warehouses, factory buildings and schools are all suitable structures for this kind of construction.

There are several ways to make curtain wall panels but the first step is always to shape the sheet metal into the desired form. In the case of the Alcoa Building, the aluminum sheets were 6 feet wide, 12 feet long and ½ in. thick. The sheet was stamped with the design used and two men fastened the sheet into place after it had been hoisted to the desired position. Later another crew sprayed a 4 in. layer of perlite and sand on the inside surface to form a light weight aggregate backing.

Other types of panels can be formed in the local sheet metal shop and the perlite mixture poured before taking the panel to the construction site. This takes the manufacture of curtain wall out of the specialty class and brings it down to the point where it is a commodity, obtainable at any sheet metal shop.

Curtain wall panels for large multistoried buildings require extensive manufacturing facilities, and the tendency will probably be to fabricate them in factories.

Once a building has the foundation laid, weather no longer becomes a problem of importance as far as keeping the job on schedule because construction of curtain wall can be done in all kinds of weather. It is the safest working material for building construction because scaffolding on the outside is often not used at all, the work being done from the inside.

When construction is finished, no painting is required on the exterior, which becomes a major problem in maintenance costs on other types of construction. If, due to industrial deposits, it is necessary to clean a curtain wall building, all that is needed is soap and water.

# Adapting Summer Cooling to Existing Warm Air Systems

By S. W. Reid Associate Engineer, York Corp.

#### Seven Points to Remember

- Load estimating need not be done room by room, but the house may be considered as a box.
- Selecting the unit with sensible capacity within 80 per cent of calculated peak sensible load is satisfactory.
- Cooling unit air requirements should be checked against farnace blower cfm and fan motor horsepower.
- Although the unit may be located wherever convenient, the upstream side of the furnace is generally simpler because of the single return duct.
- The duct system should be checked for leaks and necessary insulation,
- 6. Check grilles for diffusion and throw.
- The cooling unit should be tied in with the heating plant so that the blower will always run whenever the cooling unit runs.

ALTHOUGH THE POTENTIAL MARKET for residential air conditioning has been long recognized, the air conditioning industry has only recently developed cooling units which have the lower price and high quality that make them attractive to home owners. Postwar investment in tooling and marketing facilities have permitted a steady reduction in product cost. Constant research and development have improved equipment and made it possible to extend to purchasers attractive guarantees.

This article will discuss the adaptation of mechanical cooling units to existing forced warm air systems. Since these systems already have a blower and ductwork, central station cooling can be had for little more than the cost of the equipment itself.

#### Estimating the Load

The cooling load can be estimated in a simplified manner by making use of one of the many short form estimate sheets, based on the ASHVE Guide, that are available to the cooling trade. It will be found that most of the load comes from heat leakage and solar radiation. Outside air in the amount of one air change per hour is sufficient.

In small residences a room-by-room load analysis has been found unnecessary. This is usually done on new jobs to proportion air flow, but since the duct system already exists in the type of home under discussion, the objective is to achieve the best possible distribution for cooling within the limitations of the existing system.

Cooling loads should always be calculated as carefully as possible. Overestimating to play safe is a mistake both from the standpoints of comfort and economy. Heating dealers accustomed to sizing heating equipment liberally will appreciate the economic aspects of oversizing when they realize that in terms of the initial unit cost, a cooling Btu costs roughly 10 times as much as a heating Btu. With the cooling unit independent from the heating unit, it is possible to select exactly the right size of each.

#### Selecting the Cooling Unit

In commercial jobs where the load is predominately internal, predictable load peaks occur which must be met while they are being produced. In residential jobs the

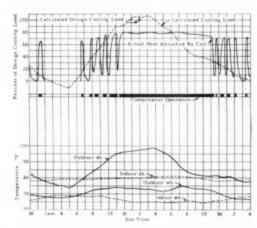


FIG. 1—ACTUAL AND CALCULATED cooling load on residence and air temperatures

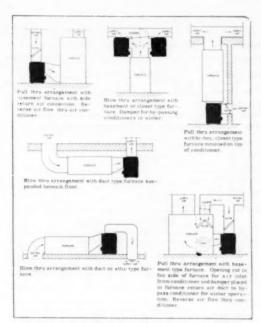


FIG. 2—FLEXIBILITY OF APPLICATIONS when adapting cooling units to forced warm air heating system

load is predominately external. Peaks occur, but their effect on the air conditioning equipment is subject to a considerable time lag, depending upon the mass of the building material and its furnishings. This heat storage characteristic of residences flattens load peaks, and thereby permits loads to be handled over a longer period of time, with equipment smaller than would normally be needed were it necessary to handle the peaks simultaneously with their occurrence.

The actual and calculated cooling load on a residence and the operating characteristics of the plant during a typical 24-hour period are shown in Fig. 1. Examination of these curves will show why it is possible to select equipment as much as 20 per cent lower in capacity than is indicated by the calculated maximum.

Residential units should be selected on the basis of sensible capacity. Latent loads, based on one air change per hour, are small enough so that any machine having sufficient sensible capacity will always have enough latent capacity. It is not good practice to select machines for total capacity, as this may result in insufficient sensible capacity.

There are two other reasons for properly sizing a residential cooling unit: cost is one, and the other is comfort. It is an accepted fact that comfort is a function of relative humidity as well as dry bulb temperature. A properly sized unit will run more constantly and will, therefore, maintain better control of humidity. An oversized unit will cycle on and off frequently, as required. During the "off" part of the cycle, humidity will build

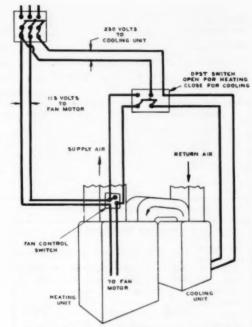


FIG. 3-WIRING CIRCUIT for summer or winter

up rapidly due in part to re-evaporation from the coils and a "stuffy" condition will prevail. If relative humidity is kept under control, considerable dry bulb slippage can be tolerated comfortably.

In addition to sizing the cooling unit properly in regard to the load, consideration must be given to the air quantity available from the blower in the heating unit. Two means for estimating cfm may be used. Furnace manufacturers usually design for about 8.6 cfm per 1000 Btu input to the furnace. Furnace input can be found on the furnace data plate. Fan size is the other clue to furnace cfm. Against 0.2 in. water duct resistance pressure, the following cfm and fan sizes will usually be used by the furnace manufacturer:

Fan Dia.,	
Double Width,	
Double Inlet	Probable cfm
9	800
10	1200
12	1800

The amount of air available must be matched against cooling unit requirements. Cooling units are usually designed for an air quantity falling somewhere between 300 and 400 cfm for each ton or 12,000 Btu per hour of capacity. Therefore, if the furnace blower can handle air within the required range, the job will be satisfactory. Air through the cooling unit is not critical, since for each plus or minus 5 per cent change in cfm from a nominal 400 cfm per ton, there will be only about plus or minus 1 per cent capacity change.

District or
Distributor

Estimator

Date

Purchaser

Address

Job Location

Pitts burgh, Pos. Space Used For Residence

Floor Area: 1080(2 F10075) sq ft; Ceiling Height 7.5; Volume 8100 cu ft

#### 1. SURVEY DATA

Design Conditions				Outside Walls (Sq Ft)			Ft)	Outside Air Through Condition		
Item	Outside	Inside	Difference		Gross Wall	Glass	Net Wall	VENTILATION People × cfm each (Table 1) =		
db	95	80	15	N	305	26	279	INFILTRATION		
wb	-	00	10	E	400	40	360	Exhaust Fame cfm = cfm = cfm for air changes /br =	135	
***	75	-		S	305	42	263	Infiltration of total	,00	
% rh		50		W	400	52	348	OUTSIDE AIR	-	
gr/fb	1		21	Interior	Walls		mg ft	Use Ventilation or Infiltration ofm, which-		

#### 2. COOLING LOAD-BTU/HR

Sensible Heat Load		
HEAT LEARAGE SQ FT FACTORS	Btu	/hr
Wiadows-Sunlit		
Glass 34 × 110(Table A) = 34 × 55(Table A) =	'	980
Skylights ×150 =		
Glass 108 x1 11x 15 T.D.		831
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	/	031
Glass Block ×0 46× T D =		
Walls	,	566
7.0	2	706
Shaded 902 x80	. ~	100
Coiling Under:		
Plat Book 540 x 6 (Table B) -	.3	240
Finished Boom X8 6		
Place Over		
Plainted Room ×3 6 -		678
Total Heat Leakage	13	-
ISTRANA HEAT	13	871
Lights Watta x3 4 People 4 x195 Table C1-	-	780
Motors by×2545 -		
Motors (fac) • 25 bp × 2545 -		634
Applianess × =		
× -		
Total laternal Sensible -	1.5	285
Outside Ara 135 dex 15 Freeze def x   08 -		187
		472
Total Sensible Heat Load -	1/	4/6
Latent Heat Load		
INTERNAL HEAT		620
People 4 ×/55 Table C) =		020
Appliances × -		
Total Internal Latent		-
OCTAINS AIR		020
135 dm x 21 gr / b diff (Table E) x0 68 =	/	,
Total Latent Heat Load -	2	548
TOTAL HEAT LOAD -	20	020

#### 3. HEAT GAIN TABLES

Table	- A-	-Sunl	it Gli	see Fa	ctors	*		
Direction	NE	E	SE	5	2.M.	I W	NW	
Sun Time at Max Load	A M	A.M	9 A.M.	12** Noon	3** P M	P.M.	5 ° °	
Awaings Full Shading	30	45	35	30	45	55	42	
Inside Venetian Blinds	60	90	70	50	90	110	80	
Glass Block No Shades * Btu/hr/sq ft sas	88	78	80	39	67	86	62	
	ch maxit	mum los	lit Ro	of Fa	ctors	*		
Flat Roof: Uninsulated		(	No ceiling		lver eiling		ttie	
Frame or heavy masonry			18	9 16		14		
Light Masonry	sonry		28	18		24		
Insulated—any const	1.		12		10		10	
* Btu/hr/sq ft roof	3"		7		6	1	8	
			Name and Address of the Owner, where the Owner, which is the Owner,	nt Fa	ctors		_	
Degree of Activ Typical Applica	ity and	-00	Sen	aible u.br	1	Later Btu, l		
Seated at rest.—Then Seated, light work.—Office work, active Walking slowly, stan- Seated eating.—Rest Light bench work.—I Moderate dancing Walking 3 mph.—Fa- Heavy Work.—Bowh * Includes 60 Btu.	ding—St orant* factory ctory ng—Fac	tory		195 195 200 300 220 220 245 300 465	30	155 205 256 236 236 536 805 786 985		
The second secon	CONTRACTOR OF THE PERSON NAMED IN	POR HOUSE STATE OF	The second second	ion F		-		
Application		fm per Person		Applicat	tion		m per erson	
Bank Barber Shop Cocktail Bar Department Store		10 10 40 7%	Re Shi	ice, tiene ice, Priva staurant op, Retail	te		15 30 15 10 73a	

# Table E—Differences in Moisture Content Between Outside and Inside Air (Grains/lb of Dry Air) Outside wb at 98 db Quaside wb at 100 db

Inside dh	Outside what 95 db				Quiside what 100 db				
At 50% rk	75	76	77	78	7.5	76	77	7+	
76	32	38	45	51	24	30	37	43	
78	27	33	40	46	19	25	32	38	
BD	21	27	34	40	13	19	26	32	

#### 4. COOLING LOAD SUMMARY -TONS

Type	Sensible	Latest	Total	Multiplier
Internal				
Total				1.15

Since the coil of the cooling unit will impose an additional resistance on the furnace blower, the fan motor horsepower may not always be sufficient. In general it is recommended that the following be considered minimum motor sizes:

Unit Tons	Minimum Fan Motor HP	Maximum Allowable Wattage
1	1/6	270
2	1/4	405
-3	1/3	525
5	1/2	665
71/2	3/4	970

If there is any doubt about motor loading, the wattage input to the motor can be checked on the house watthour meter, providing all other electric loads are turned off. This is done, of course, after the cooling unit has been installed and all dampers are set as required.

Based upon industry-recognized general purpose motors operating at rated voltage, the above table also shows maximum recommended wattage input to various motors. A check of motor amperes can also be made comparing the value read to motor full load amperes as given on the nameplate. If a service factor is not given on the nameplate a value of 1.15 may be used.

#### Locating the Cooling Unit

It is usually more convenient to locate the cooling unit on the return air side of the furnace, since in most cases this will mean breaking into a single return air duct. If this location is used, the cooling unit must have its own air filter to keep the coil clean. The furnace filter can be removed during the cooling season. A bypass around the cooling coil can be provided for use in the winter time. This permits the slowing down of the blower with a consequent saving of power.

The upstream location always raises the question of rust on the furnace heat exchanger. Cool air passing over this heat exchanger causes condensation on the combustion side which is open by way of the chimney to outside air. Some furnace manufacturers have raised warning flags, whereas others have felt that this condensation takes place even without the cooling unit. The writer has examined a number of heat exchangers after several seasons of use with cooling units and does not believe there is any acceleration of the rusting. Once the initial rust coating is in place, the process appears to be retarded.

The interposing of a cooling unit on the downstream side of the furnace in an existing heating system may involve considerable expense in relocating and rearranging supply ducts. Quite often these branch out directly from the furnace plenum.

Without oversimplifying the problem of unit location, it must be realized that different sections of the U.S. favor different types of warm air furnaces. In the South and Southwest there are the duct-type furnaces that go well in basementless homes. In the North the standard floor mounted basement unit of the horizontal or hiboy types is more popular. In Fig. 2 is shown some of

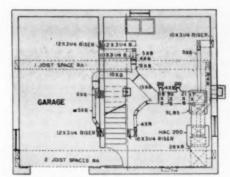


FIG. 5—BASEMENT PLAN of an actual installation in a Pittsburgh home

the possible arrangements. Each type of heating unit must be studied, keeping in mind only basic principles. There is plenty of room for ingenuity in application.

#### Checking the Air Distribution System

The distribution part of an air conditioning system is just as important as the unit itself. When the heating system is examined, particular attention should be paid to the duct system with reference to air leaks at the joinis on both return and supply sides. Many heating duct systems have been put in with simple slip joints that leak considerable air. These joints should be sealed with proper material that will not be affected by heat or moisture. Return ducts for heating systems are often constructed by nailing sheet metal on the underside of adjacent floor joists. Although this type of construction may be suitable for a heating system, it is not advisable when cooling is applied. Any influx of unconditioned air to the system where it is not wanted can seriously affect the capacity of the cooling unit to provide cool air where it is needed.

In addition to making certain the duct system is tight, consideration must be given to sweating. Insulation is rarely used on heating ducts unless they run through spaces where heat leakage from them would be completely lost. Heat leakage to basements is not considered as lost. When the ducts are to be used for cool air they should always be insulated when they pass through spaces where they might be subjected to considerable heat gain. Such a space might be an attached garage, which has its door open for long periods. Ducts in a closed basement need not be insulated unless sweating is considered objectionable. It has been found that the sweating is usually confined to sheet metal close to the conditioner. Risers in the walls are not likely to sweat if they run through inside walls which are surrounded by air of low dewpoint. If necessary, wall spaces containing the risers can be sealed off in the basement to prevent warm moist air from reaching the riser.

Former warm air practice was to design for about six air changes per hour. With this delivery, the blower would cycle on and off. For this reason grille location was important in order to avoid drafts. Present day heating practice is to set the air quantity for a temperature rise through the heating unit of between 85 and 100 F with maximum burner input. This results in almost continuous fan operation and two or three air changes per hour. Because of the continuous air circulation, lower velocities are used, and grille locations are no longer quite as critical as they once were.

When the heating duct system is used for cooling, new air quantities may be necessary which will in turn point up the need for grille changes. Each grille must be studied in relation to the furniture in the room to determine whether any change in diffusion or throw is needed. Grille design has progressed to the point where there is a grille to solve almost any problem. It is often possible to locate furniture in front of grilles to deflect air streams.

#### Selecting The Controls

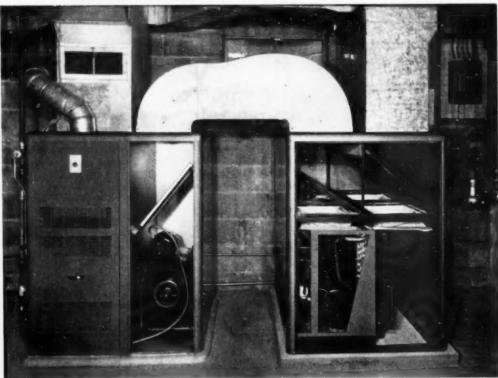
There are four phases of operation that should be provided in a year round system: heating, ventilating (fan only), off, and cooling.

The first three phases of operation are usually inherent in the heating plant. Heating is achieved automatically by means of the thermostat and bonnet fan control. Ventilation is achieved manually by setting the thermostat back and closing the "summer" switch which allows the fan to run by short-circuiting the bonnet fan control. (This switch may be a feature of the bonnet control or it may be remotely mounted). For practical purposes, the system may be shut down by lowering the thermostat.

The simplest way to tie the cooling unit in with the furnace blower is to use a two pole single throw switch as shown in Fig. 3. One pole of the switch is used to short across the fan bonnet control and make the fan operate continuously. The other pole is wired in series with the compressor power supply for small units or in the control circuit of the magnetic starter for larger units. A switch of the proper rating must always be used. A convenient place to mount it is at the head of the basement steps or just inside the utility room.

With regard to the cooling thermostat, a convenient type to use is the return-air type. This device can be mounted with the unit with its bulb in the return air. It need have only an adjustment knob that can be turned for either a cooler or warmer condition. Since the conditioner is in most cases called upon to produce comfort and not a fixed dry bulb temperature, the non-calibrated return-air thermostat is less likely to be a source of complaint than is the calibrated wall mounted thermostat that can be set for a definite temperature. If humidity is kept low, comfort will be experienced even though inside dry bulb temperatures rise above outside temperatures.

FIG. 6—SUMMER COOLING UNIT installed in the return air duct and connected to a con-



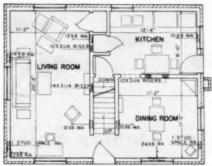


FIG. 7—FIRST FLOOR PLAN of home used in sample problem

To illustrate some of the principles covered, an actual job will be used as an example, where a cooling unit was added to an existing forced air heating plant. This particular job is a small two story brick veneer home, located in Pittsburgh.

The load estimate for this home was made on a short cooling load form, such as shown in Fig. 4. The house being of modern construction and the heating plant operation having been satisfactory, only the single load estimate covering the entire house as a unit was made. The total sensible load came to 17,472 Btu per hour. Based upon the analyses hitherto discussed, a satisfactory cooling unit would be one having a sensible capacity within 80 per cent of the sensible load. This could have been a 1½ hp unit with a sensible capacity of 14,500 Btu per hour. 83 per cent of the calculated load.

The owner's preference, in this case, prevailed and a 2 hp cooling unit was installed. This unit had two 1 hp refrigerant circuits operating on a two-step thermostat. The owner observed the operation of this unit during a complete cooling season and found that only one of the two circuits was required most of the time. A study of his power bills confirmed this. The  $1\frac{1}{2}$  hp unit having two  $\frac{3}{4}$  hp circuits would have been a more proper selection at lower initial cost, since more use could have been made of the second circuit.

A plan of the basement showing the location of the heating and cooling units is given in Fig. 5. The cooling unit was located on the return air side of the furnace because it was more convenient to break into the single return duct than it would have been to disturb the supply system. Fig. 6 is an actual installation of a conventional warm air furnace and a packaged summer cooling unit. Notice how the two are connected into the return air stream and that the cooling unit has a built-in damper which can be opened to save fan power by use of a lower fan speed in the winter.

Figs. 7 and 8 are plans of the first and second floors of the home. Air distribution in relation to the furniture can be studied. Supply and return grilles are all located in the baseboards. Grille velocities are kept very low all year around by means of almost continuous air circulation. For winter operation the cfm was based on

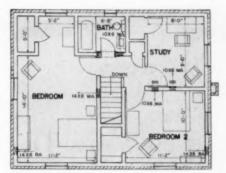


FIG. 8—SECOND FLOOR PLAN of home using year 'round air conditioning

maintaining a rise in temperature through the heating unit of about 100 F. For summer operation, somewhat more air is handled by speeding up the fan from 575 to 862 rpm and opening all the balancing dampers. This can be done in this house since the ducts were sized carefully for equal pressure drops, so that opening the dampers does not throw the system out of balance. Satisfactory operation of the equipment both summer and winter has been reported.

As a matter of interest, this house, which has a total floor area of 1080 sq ft and a volume of 8100 cu ft, had the following total utility charges for the year 1951:

Gas	158,800 cu ft	\$89.16
Electricity	2582 Kwhr	78.16
Water	120,000 gals.	12.99

(Fig. 1—Courtesy of the University of Illinois, Engineering Experiment Station)

(Appreciation is extended to York Corporation, York, Pa., for Figs. 2, 3, and 4)

(Figs. 5, 6, 7, and 8 are furnished through the courtesy of American Radiator and Standard Sanitary Corp.)

#### **Technology Answer to Labor Shortage**

THE NATION MUST RELY more and more on industrial instrumentation and other technical developments if it is to offset the increasing imbalance between the number of workers and the number of consumers, R. A. Schlegel, Minneapolis-Honeywell Regulator Co., told a meeting of top-ranking oil engineers at the semi-annual meeting of the American Society of Mechanical Engineers at Cincinnati. This condition exists because workers are retiring at an earlier age and fewer persons are entering the labor force due to the low birth rate of the 'thirties, and due to the current military service required of the nation's youth. The labor force will remain almost constant up to 1960 while the population will rise to an estimated 182 million.

The most feasible means of increasing per-worker production is by the increased application of new technological developments. The petroleum industry was cited because centralized instrumentation has advanced to a stage not approached by any other major industry.

# Seven Steps To Greater Dealer Sales

THE SEVEN STEPS to greater sales are: making every employee a salesman, building business through personal contact, selling through effective advertising, bringing in the customers by mail, putting on a good front, using displays to sell, and keeping the public sold on you, according to H. D. Bissell, Director of Merchandising, Minneapolis-Honeywell Regulator Co. as he announced the beginning of a \$100,000 dealer education program that promises to have widespread influence throughout the heating industry.

The program comprises a series of seven new how-to-do-it books now being made available to the industry. The books, along with other supplementary material, are believed to constitute one of the most unusual packaged merchandising plans ever offered the heating trade. Although the initial use of the plan is in the heating field, it is applicable to any industry that sells through dealers. Easy to read and profusely illustrated, the booklets provide a wealth of information on everything from picking a salesman to running a neighborhood contest. They not only tell what to do, but show how. Each book has from 20 to 40 pages and is devoted to one of seven merchandising steps. The subjects covered are sales training, personal selling, advertising, selling by mail, exterior display, interior display and public relations.

The books were prepared under the best guidance and advice to be found, both inside and outside the heating industry. Manufacturers in the heating industry and groups representing all phases of the heating trade were consulted before the books were written.

There are thousands of able dealer organizations in the heating industry alone who are well qualified to upgrade their performance and profits substantially if given the right kind of help, at the right time, and with sufficient inspiration and enthusiasm. These are the businessmen for whom the messages have been prepared.

Included with the books are supplementary aids for carrying out important recommendations. Among these are a 50-page prize merchandise catalog from Cappel-MacDonald, prize merchandise house; a 40-page catalog from Reyburn's, maker of store display material; a Brown and Bigelow catalog, featuring give-aways and remembrance advertising and an especially prepared Good merchandising can only result from a well-planned sales campaign. Sales approach must be altered as business conditions change. Increased merchandising know-how in the face of a buyers' market is needed

brochure from F. W. Dodge showing how to use the Dodge reports.

Also included is a collection of "Tips on Setting Prices and Controlling Overhead". These tips, assembled from leading business publication articles, provide facts and figures on such things as computing job costs, depreciation, bad debts, inventory losses, owner's salaries and taxation.

While preparing this set of instructions, three major objectives were kept in mind at all times: one, that the merchandising package be complete; two, that it be ethical and in line with good business practices, and three, that it be completely feasible and within the financial scope of any dealer, large or small.

#### Have a weekly get-together with your men

The purpose of every sales meeting is three-fold: to create inspiration, exchange information, and to build congenial relationships.

While you'll want to keep your meeting as short as possible, its length will depend upon the sales problem at hand. Discussions should be cordial and informal. Plan your meetings in detail and guide them so that they concentrate on specific objectives. Many dealers line up interesting programs weeks in advance, such as is outlined below.

It is also a good idea to have your men act out interviews to illustrate how certain selling points can be handled. This is an excellent method for improving sales technique. You yourself should take the initiative in participating in these practice interviews. It dissipates any tendency of self-consciousness on the part of your men, and it can do you good, too.

#### Suggested ideas for weekly sales meetings:

1st week — Policies of estimating and quoting 2nd week — Sales feature discussion by representative of heating equipment manufacturer

3rd week — Developing prospects

tth week — Joint luncheon meeting with salesmen and their wives, presenting the overall program for developing new sales

5th week — Handling complaints and service problems

6th week — Talk by representative of manufacturer of control equipment on the modernization market

7th week — Making it easy for the customer to buy (credit selling)

8th week — Selling techniques as demonstrated by individual salesmen

#### All have the same sales problems

Whether your business is small, medium or large, you can be operating as a "lone wolf" or heading up a well-staffed sales and service organization—yet, basically, the sales problems are identical.

To insure healthy business growth, you must win new customers to replace normal turnover and to build volume. You must keep your old customers sold. The service you render is a highly personal one. You deal directly with the health, comfort and well-being of many families and business organizations. This is a privilege that can be both pleasant and highly profitable. The fellow who keeps faith with his customers and instills a warm friendly feeling in them is on his way to better things.

The old style, order-taking type of heating firm is rapidly out-distanced by the more progressive, merchandising minded organization that always thinks and acts in terms of how it can most effectively serve the customer and get the order. In the showroom, in the shop, and on the job—every person in your organization must help you win friends and increase sales, simply by aggressively going out after business instead of waiting for it to come in your door.

And remember, a strong dealership starts with the dealer himself. Your relations with customers set the standard by which others in your shop will operate.

#### Building your sales team

You must have manpower, the right manpower. Your heating equipment suppliers who have a personal interest in the success of your business, will tell you that you can't build your business without the necessary manpower. If, for example, you are a dealer with two or three men, and have not added any new help recently, now may be the time when you should consider expanding your staff sales-wise. You should build slowly, picking your men one at a time. You may decide that your first move would be to add another apprentice to your shop before looking for increased work that a full time salesman would bring in.

Then too, you may wish to build your sales program the way one dealer with a small staff worked it. His first step was to bring in a competent office assistant to



THE SALES MEETING, pooling the talents and ideas of the men who are facing customers daily, is an excellent way to build morale, encourage individual effort, and accord recognition for good selling jobs

keep books, estimate jobs, and order supplies. This left the boss free from much office routine so that he could concentrate on outside selling. Before long, he was able to take on a junior salesman. In less than two months, increased sales demanded his getting another truck and two installation men.

You may be so fortunate as to have star salesmen—yourself included. But a successful business—just like any atheletic team — requires more than a pair of star performers to win consistently against tough competition. Your team must be strong at every position—and when the going gets rough, it's the team which has strong reserve material in depth that wins. Your sales organization—whether it be one man or several—is materially strengthened if you can strengthen it in depth.

Your "first string" sales force is your regular full-time salesmen. Other "salesmen" in your organization are the service and installation men — the inside shop workers — the girl who handles the phone.

#### The office girl

When customers call or visit your shop, often the one who deals with them first is your office girl. Make sure you have first rate clerical help that is personable, neat appearing, and able to meet the public. It is also important that your office girl cultivate a pleasant telephone voice.

In addition to her other office duties, she is in a position to help your sales materially. Make sure that you have a girl who not only answers simple inquiries, but possesses the conversational skill to sound out the customer's interests and needs. She should be well informed about the sales features of your products.

#### The service and installation men

These men have tremendous sales possibilities—and their selling power has been overlooked by nearly every shop in the land. They are the fellows who hold a passport into the homes of all your customers. Tough customers with armor-plate thick enough to withstand

#### How does your shop stack up saleswise?

Below is a handy check list to help measure how well everyone at the shop is practicing the art of selling in their daily contact with the most important people you know—your customers.

	Excellent	Fair	Poor
1 Is your ratio of salesmen to shop help® sufficient to keep a healthy growth of new busin	ness?		
2 Do your employees handle customers tactfully in all of their customer contacts?			
8 Are all of your employees good "boosters" for your shop—both on and off the job?			
1 How careful a study have you made of the sales possibilities in your community, for new and replacement business?	both		
5 How effectively are you operating according to a seasonal sales plan?			
6 Are you taking all possible advantage of sales and promotional help available to through your manufacturer's and wholesaler's representatives?	you		
? Are you using sales and service training programs to best advantage, when sponsored various heating equipment manufacturers?	d by		
8 Have your salesmen worked up portfolios or loose-leaf sales manuals, providing interestacts for the sales interview?	sting		
9 How would you judge the instruction given your salesmen in the following catego	ries:		
product knowledge			
general heating experience			
general sales training (also rehearsal of sales presentations)			
organizing his work (developing prospects, applying sales strategy, planning call	ls).		
10 Are sales meetings planned in advance and prepared for maximum interest?			
11 Are you making effective use of show-room models and home demonstrators of her products which you sell?	ating		
12 Have you made full use of testimonials, photos of installations, and lists of satisfied use the selling of your products?	ers in		
15 Does your present payment plan combine the elements of security and incentive to pre- consistently good sales results and minimum turnover of salesmen?	ovide		
14 Does your payment plan for employee sales leads and for salesmen enable you to proper emphasis on selling those goods which you wish to increase in volume?	place		
15 Are you taking advantage of sales contests to boost sales effort?			
(°NOTF: Inquiry among heating dealers indicates that one salesman should keep from 4 shop and installation men busy. This figure will vary according to individual abilities,	to 6 local		

[Each book contains a similar questionnaire that asks the heating dealer to compare his present business practices with those recognized as being modern ways to impress the public.]

the heaviest sales ammunition in the showroom, often jump at the chance to get heating information from a well-informed service man.

conditions, and the character of the shop business.)

The ideal service and installation man should not only be a skilled mechanic—he should also be trained to have the necessary sales presence to keep your customers sold. He should be able to size up a customer's needs so that he can develop the customer's interest in certain repairs or replacements that would improve the heating in the home. Train your men to observe the condition of heating and control equipment while out on the job.

Have them report any obsolete or faulty equipment that should be repaired or replaced, so that a salesman can make a follow-up call. By rewarding your men for these services, your salesmen will be kept with a steady supply of prospects.

#### The man in the shop

You may have a repair and service man who normally limits his time to inside shop work. He has little or no contact with the customer—yet he can also be an important member of your sales team.

Build him up on the importance of his job—that the success of the business hinges on his ability to give customers the best of service.

When possible, send him in for supervised factory training to make him expert in the servicing of your heating line. The fact that high mechanical standards are maintained in your shop can be used as one of your most potent sales arguments.

During his off hours your shop man can be a profitable business booster—turning in valuable sales leads to you or your salesmen.

#### The importance of the salesman

Obviously the main burden of keeping business going at a steady pace is placed directly upon the shoulders of your sales force. Whether it consists of only yourself or a group of inside and outside salesmen, it is essential for every progressive business to emphasize a strong, aggressive sales program. The charactes of your business depends upon the calibre of salesmanship you present to the customer. One diligent, creative sales producer is worth a dozen peddlers or "hit and run" salesmen.

Today's successful heating dealer is essentially a sales organization, backed by dependable service. Selling is for men who want to make money. You've got to sell to stay in business.

#### There may be a treasure buried in your basement

If you are so fortunate as to have old records of jobs done 15 or 20 years ago, you may have a gold mine of modernization prospects tucked away in your archives. Look over your list of older invoices, job tickets, or card files for clues to greater sales.

Heating plants, burners, automatic controls have made significant advances since these jobs were first installed. A great share of these early customers have never bothered much to keep their heating system as up to date as other equipment in their home or building. Just think of the modern refinements and increased efficiencies in heating equipment you can offer them today. Here is the basis for an entire sales campaign—complete with direct mail, telephone selling, and a personal followup by salesmen.

Here's "new" or forgotten business—call it what you may. Even though property ownership might have changed since these installations were made, your equipment is still there and the new owner as well as the old customer will respond favorably to your enduring concern with his heating system. Your salesmen need never feel apologetic in reviving these old business relations. They are performing a valued service by showing a genuine interest in helping the customer keep his heating equipment up to date.

Frequently old legal permits at the city hall or court house show heating installations of 12 or 15 years ago. These should furnish a good source for modernization prospects.

You are bound to uncover heating controls, burners, and heating plants in need of repair or replacement—yet, in most instances, the customer has never bothered to call for service unless his equipment failed him completely. It strongly bears out the fact that the owners of older heating equipment are naturally complacent. They will put up with inefficiency, inconvenience and

discomfort for years without coming to you with their heating problems. You must go to them and create a desire for the advantages of new heating comfort.

#### The right approach gets your foot in the door

Assuming that the man you select for your outside selling has received his basic training in heating and salesmanship, he is now ready to be trained in the technique of getting in the door. All your training is wasted on him unless he can gain the prospect's ear.

Plan every move. . . every word that your salesman will say when your prospect answers the door. Those first moments before the man or lady of the house will determine whether your salesman makes a hit and gets on base, or whether he strikes out.

Here is a trick in psychology that has worked successfully for some of the more experienced men in direct selling: when the party answers the door, the salesman gives a big hearty smile, greets the person by his or her name if possible, then he takes one step backward. The prospect's initial impulse was to get ready to resist an invasion. By doing just the opposite of what had been expected, your man gains a momentary advantage by having surprised and disarmed him. He also implies to the homeowner that the expected thing for him to do is to open the screen or storm door. The salesman has already stepped back to suggest that the door might swing open for him any second. In many cases, the prospect will then at least stick his head out the door in sheer curiosity.

Another successful maneuver is for the salesman to remove his rubbers at the prospect's door. This is an obvious indication to the prospect that the salesman expects to be invited into the house.

#### Why should you advertise?

First of all you are in business, and, unless you represent an unusual minority, you would like more business. The best way to increase your business is to get more prospects—more customers. To do this you must tell and keep telling more people who you are, where you are, what you have to sell. This is the job advertising can do for you.

Advertising will identify you to people who need your services but do not know that you exist. Advertising can make people conscious of needs for your services and the products you sell. In short, advertising permits you to reach out and present your selling story to people who otherwise might never see or hear it.

The general public is notoriously forgetful and regardless of the effectiveness of your first contact with them they must be reminded of the services you can provide. Your name should be in their minds when they decide to buy whether that decision is made in your showrooms or over their breakfast table. Thus, effective advertising is rarely a one-shot proposition. Use it constantly if you expect the benefits to continue.

There's more than one way to present your selling story to the public. You can corral prospects individ-



DEMONSTRATING THE PRODUCT, describing salient points and advantages of equipment to the customer gives the salesman a head start in clinching the sale

ually or you can use one of the many forms of mass advertising. While personal contact is by far the most effective means of selling, there just aren't enough hours in a day to approach every prospect personally. With advertising, however, you not only can reach all these prospects, you can keep your name before them constantly.

#### Concentrate on the best market

Once you have decided to advertise, your first step is to determine whom you want to reach. This can easily be done by checking your back records and files. Locate your customers on a map; then select the form of advertising that gives you the best coverage of the area from which you draw most of your customers. Your advertising will be more effective if you concentrate on your best market before setting your sights on wider horizons. In any case, be sure you have a clear picture of your trading area, as well as a concrete objective to accomplish with your advertising.

You will find that some forms of advertising are better suited to your purposes than others. Large metropolitan newspapers, radio, television and car cards are generally suitable only for larger heating dealers servicing wide areas. Media such as community or suburban weekly newspapers and handbills make better sense for small dealers with limited markets. Billboards, on-the-job signs, local theater advertising and telephone directory listings are flexible enough for use in a small or large way by most all heating dealers. And don't forget direct mail, a medium important to every heating dealer.

Use more than one type of advertising whenever possible, but be careful that you don't spread your money too thinly. Whatever you do, do it well, as powerfully as your dollars will allow.

The size of your potential market and your budget will generally determine which medium you should use. Try to select media that can give you, all facts considered, the best prospects per dollar spent.

#### Bringing in customers by mail

In using direct mail advertising to the homeowner, you have a better than even chance of getting attention. Natural curiosity causes the average person to check through his mail with considerable interest. While being primarily concerned with personal correspondence from friends, most people also are curious to see what the day's mail brings them in the way of special information or offers from advertisers. The amount of advertising literature received in this way by most homeowners generally is not great enough to dull this natural interest.

Almost invariably, the homeowners will at least take time to see what your literature is about. Your ability to hold this attention and develop it into action depends upon your presentation in terms of the prospect's natural interests or needs. The better your presentation and the more people you contact, the more sales you will make.

Direct mail provides one good way for a firm to stretch its effective sales force. Each piece of literature you drop in the mail box has its chance to tell a specific sales story to a potential customer. Properly used, direct mail will save your salesmen plenty of footwork in locating new prospects and in keeping in contact with your regular customers.

Direct mail advertising provides a completely flexible sales tool for your use. It is the most budget-minded of all advertising and can be custom tailored to the practical needs of every heating dealer—even the one man shop. With it you can key your message and your mailing list to fit the particular needs of your business. Use direct mail advertising well and it will reward you well—use it thoughtlessly and you will waste your dollars.

#### How to locate new prospects

With direct mail, you can cold-canvass a large number of people who may be interested in your products or services. The response you get usually can be expected to come from the best prospects. And those who do not respond immediately are not necessarily a lost cause. At least, they may have been impressed and will remember your company when a need arises. In this way, direct mail helps sift business from a large area with a minimum of wasted sales effort and expense. At the same time, it builds for the future by acquainting a new group of people with your products and services.

Direct mail advertising provides one good way of getting your sales message into the hands of a large number of selected homeowners at a relatively low cost.

#### Putting on a good front

Have you ever wondered what people think of your shop as they go by? Do they see it and remember it?

The impressions you make are very important. Many successful dealers have helped build their business quickly through putting on a good front—by dressing up their shop, their service trucks and themselves. You can do it too.

To attract trade, your shop should be located near the people you wish to serve. If your business is set up for modernization work, you'll want to be on a good street in one of the older, well-populated sections of your city.

Or if you are out after new construction jobs, you'll do well to have your shop in one of the newer, fast-growing areas.

On the other hand, if you plan to concentrate on commercial work for large buildings, it's most desirable to be near the offices of the large contractors, engineers and architects.

In every case, make sure you are handy to your customers, even if it involves a move. If you are not thoroughly sold on your present location, it may be well to check with local real estate companies. Often they can help you make a move on an economical basis. Be sure to consider the availability to public transportation and facilities for parking. If possible, try to locate near a busy shopping area with a lot of local traffic. Your local city officials and neighborhood businessmen are a good source of information on conditions in each area.

Plan to grow, but don't extend too far at a time. If you get in a good location, do a good job of merchandising and operate a sound business, you'll find almost no limit to your success.

And remember: if you are going to be successful, you've got to look successful.

#### Using displays to sell

The desire to own things knows no limit. People everywhere want to have the nice things they see — particularly if these things are displayed in surroundings that point out the pleasure of owning them.

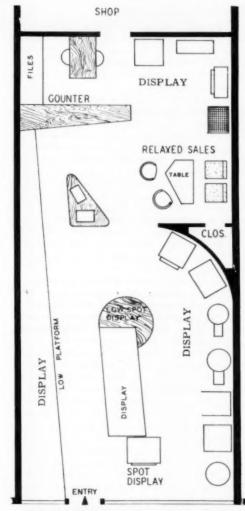
On the other hand, people tend to forget about the things they do not see frequently. That is one of the reasons why the average homeowner overlooks modernizing his heating plant while making many other less important improvements in his home. That is why store display is so important for the heating man in today's merchandising. It calls attention to heating. It gives the customer a chance to see the product . . . to feel it . . . to imagine it in his own home. It makes him want to buy . . . and that means more sales and more profits for you.

#### Effective Displays Are Essential

The basic principles of display selling can be used effectively by the smaller heating man as well as by the larger one. It doesn't matter whether you feature 2 products or 22 . . . good display is simply a planned way of letting the customer's eyes, hands and heart do the selling for you.

How many times have you been asked "Is this kind of heating clean?" Whether you sell stokers, oil burners, or gas burners, the customer wants to be assured that your type of heating is clean.

It's pretty tough to be convincing in a dirty showroom,



HOW A SHOWROOM can be arranged to encourage sales. Traffic aisles permit the customer to examine all major displays personally. Types of equipment are grouped, and platforms are provided to improve display appearance and assure better visibility

particularly if a customer happens to run his hand through dust on the top of the unit or if he sees bits of trash scattered about.

You can have your cleaning done by your regular employees or by a cleaning service. Make sure that whoever does the job is careful not to splash or soil your displays.

You'll save a lot of untidiness by keeping wastebaskets and ash trays handy, if they are emptied and cleaned regularly. Also be sure to impress your employees with your personal interest in good housekeeping both in the shop and on the display floor.

If you want to sell a product . . . display it well.

#### Keeping the public sold on you

What is the value of your business today—the face value—the shop and service equipment, the office furniture and supplies, the stock on hand—everything? Would you consider selling for this amount? Of course not—not if the price included your business name and community good will.

Often, a business name that is recognized and accepted by the public is worth many times the physical value of the company. The reason so much value is attached to good will is because it is largely responsible for bringing in repeat business and for attracting new customers. It is a key factor in determining the success and growth of any company.

However, good will toward your company name is not a commodity that you can buy on the open market. It is a great intangible asset that must be created in the minds of the people with whom you are doing business now, or would like to do business with in the future. It is built up over a period of years and represents the public attitude toward yourself, your products and your personnel.

There are many ways of building and keeping good will for your company—and just as many ways of losing it. Yes, people are always talking and that's good—it's good for your business as long as you keep them saying the right things. That's why it's so very important that you give them the right things to talk about.

Often, you hear people say "It's fun to stop in that store. Everyone is so helpful and glad to see you—even when you don't huy." In some cases, the opposite is true and customers complain about being treated as though they were interrupting the help or as though they weren't supposed to inspect any of the equipment on the floor without first showing their cash.

Successful businessmen find that it pays to make a special effort to be courteous to their trade. Customers should always be greeted cordially upon entering the store, be invited to look around either before they are waited upon or after. When they leave, give them a pleasant invitation to drop in again. Most customers appreciate these little courtesies and speak well of a store because of them.

#### Your business is just as important as you make it

Be proud of your profession as a heating man. Because of it, you have a big responsibility in your community. Day and night, it is your job to protect the health, the comfort, and the safety of the people in it. Because of your skill, people live in safety and comfort never before possible. They are healthier and live longer.

You are a trained expert in your line just as any professional man is an expert in his and don't let anyone in your community ever think otherwise. As an expert, you have the responsibility of maintaining the standard of the profession. Always try to make a good impression and do a job of which you can be proud. Then you can be glad that people talk—it's the finest advertising in the world.

#### Highlights of 'Seven Steps' books

Book No. 1. "Making Every Employee a Salesman"

Covers the subject of personnel from the standpoint of building up an effective selling organization, tells how to go about selecting a good salesman and preparing him for the job, gives information on planning sales, sizing up customers, using demonstrations and closing the sale. Also discusses questions of salary-vs-commission and sales contests.

Book No. 2, "Building Business Through Personal Contact"

Discusses the broad scope of aggressive dealer selling, shows how to uncover sales leads, how to keep such leads alive and how to approach the landing of big sales; also covers personal solicitations, modernization and methods of counteracting seasonal slumps; tells about upgrading, how to cope with the price shopper and with customer resistance.

Book No. 3, "Selling Through Effective Advertising"

Gives the dealer complete information on all types of advertising; tells him, in one-two-three fashion, why to advertise, where to advertise, how much to spend and what to advertise; discusses use of all media, including publications, television and radio, car cards, theaters and billboards; points out the advantages of these media, as well as their pitfalls and limitations.

Book No. 4. "Bringing in the Customers by Mail"

Goes into the details of this basic, but frequently neglected and misused approach to sales; tells how to build mailing lists that hit the target, how to prepare mailing pieces, how to write collection letters; explains postal regulations and rates, and the mechanics of handling mailing problems.

Book No. 5, "Putting On a Good Front"

Emphasizes the impression that exterior appearances make on customers; explains the value of signs, paint, lighting, cleanliness and neatness; covers the whole subject from windows to trucks to uniforms on service men.

Book No. 6. "Using Displays to Sell"

Again stresses cleanliness and neatness, this time on the interior; tells how to arrange merchandise effectively, how to set up demonstrators, how to paint and light interiors for attractive presentation of goods on display; discusses the arrangement and importance of stockrooms.

Book No. 7. "Keeping the Public Sold on You"

Goes into public relations and the importance of a dealer's reputation; outlines ways and means of maintaining a good reputation with quality work, follow-up calls, giveaways and participation in local events; shows how to obtain favorable press notices, gives tips on what makes acceptable news and how to work with newspapers.

The foregoing is a review of the program being conducted to upgrade sales among heating dealers. The plan is available at \$3.00 from Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., South, Minneapolis 8, Minn.

# **Using Low Velocity in Perimeter Systems**

The application of the small pipe system has become a subject of much conversation within the industry in recent months. Clarence L. Grandstaff, chief application engineer of The C. A. Olsen Mfg. Co., also chairman of a special committee appointed by the National Warm Air Heating and Air Conditioning Association, herein presents his findings for our consideration. The committee has compiled the latest data on the use of small pipe systems in houses built over crawl spaces as well as those having basements

Any discussion of the small pipe system of heat distribution must of necessity tie in with perimeter heating, because of the fact that it is only with the perimeter placement of the outlets that the most satisfactory results are to be expected.

In reviewing the past, we find that neither perimeter heating nor small pipe systems are new, but that both methods of heat distribution were used a number of years ago. The perimeter loop system was installed in basements but was not widely accepted, and the small pipe system fell by the wayside, probably due to improper register usage and inadequate blower capacities.

A few years ago the warm air industry was faced with the serious dilemma of developing a system of heating that would adequately warm a structure without a basement, or of losing the heating of these structures to competitive systems.

#### Perimeter Systems Defined

It was a known fact that no system of heat distribution in these buildings which did not supply heat below the floor could produce the desired degree of comfort that the American home owner expected. Systems of distribution which place warm air outlets in the high side walls or in the ceiling could raise the air temperature to the degree of temperature at which the thermostat was set, but there always remained a cold stratum at the ankle level which was not comfortable.

Some far-sighted individuals with a bent for experimentation decided that the forced warm air furnace was ideal for heating the basementless home, and that the blower equipment could be used to deliver the heated air where it would do the most good — i.e., at the outside wall, along the perimeter of the building where about 80 per cent of the heat loss takes place.

These systems came to be known as perimeter systems, but all was not satisfactory when excessive operating costs and excessive moisture were experienced. These conditions were later attributed to lack of insulation at the perimeter and also to moisture conditions below the slab or in the crawl space. Three years of field investigation along with instrumental study at the University of Illinois, sponsored by the National Warm Air Heating and Air Conditioning Association, have made it possible to develop methods of construction which have reduced to a minimum all of those factors which would lead to poor results. Manual No. 4 of the National Warm Air Heating and Air Conditioning Association thoroughly covers good construction practices for basementless structures, and the data sheets supplied with Manual No. 4 furnish design data for the heating engineer's use.

Today the warm air industry has come of age. Heating engineers are now taking full advantage of the blower which was adopted as part of their equipment some 25 to 30 years ago, but which they failed to use to its best advantage. The air circulating blower delivers warmed air to the perimeter of the structure where it is released through diffuser type registers below the windows, thus warming the floors in passage and reducing to a minimum the drop of cold air to the floors.

#### Two Types of Small Pipe Systems Available

The small pipe system, like the perimeter system, is not new as it too was tried some 20 years ago with a small degree of success and its share of failures.

It took newcomers in the forced warm air field to develop new distribution methods and to revive the use of small pipe distribution systems. The use of these new systems, and improved blowers, have made it possible for heating contractors to reduce installation costs and for warm air to enter fields which it could not previously reach because of installation costs.

There are two basic systems in use today, both of which utilize an old principle, that a rapidly moving stream of air will influence static or slow moving air to flow in the direction of the faster moving body and to join it, thus increasing its volume and at the same time reducing the velocity of the higher speed jet. If the faster moving stream is of a higher temperature than the induced air, a tempering takes place which makes it possible to use high temperature air in the pipes and yet have low temperature air circulated in the rooms.

One of the systems in use today has a specially designed register box, with a built-in venturi. The heated air is delivered at a maximum velocity of 1200 fpm from the furnace and is released in such a manner into the special register box that room air is siphoned into the air stream through a grille. The air is then mixed in a duct and delivered into the room through a second

grille. Because of the construction of the venturi and the supply outlets, they are not suitable for perimeter use. They do a good job of heating if placed on inside walls near the outside walls in buildings where construction will permit the installation of supply ducts beneath the floor surface.

The second system makes use of the perimeter system of distribution with specially designed floor or wall diffusers placed at the outside wall below the windows.

With the second system, warm air is delivered through 4 inch diameter pipes at velocities ranging downward from 1100 fpm. The register velocities are considerably lower than 1100 fpm but are high enough to have an aspirating effect on the room air. Diffusion of the air breaks down its velocity and in this way prevents objectionable air velocities in the living areas of the rooms.

The small pipe system has been referred to as a high velocity—system by many installers, and it is granted that, if some of these systems designed from previous sizing charts are to provide adequate heat, they will require furnaces equipped with blowers that will develop high velocities. If the blowers and motors are not capable of developing the required velocities, the air temperatures will rise to the limit switch setting, thus causing excessive metal temperatures which may result in damaged heating elements; or high stack temperatures will be encountered with the resultant reduction of efficiency and high fuel bills, none of which are desirable.

In studying the various systems and the claimed Btuh capacities for small pipe systems, before writing Manual No. 10, the National Warm Air Association Committee members found that various static pressures were being used with temperature rises through the units ranging from 100 up to 130 degrees. As a result, the claimed Btuh delivery of each proponent's system was different and confusing.

It was at once evident that any general manual for the design of small pipe systems must comply with standard rating practices, which in most cases set a maximum static pressure of .20 in, external to the unit, and a temperature rise of from 70 to 100 degrees through the unit,

#### As Pipe Diameter Increases, Duct Loss Decreases

Temperature drop through the ducts has a pronounced effect upon the amount of warm air that will flow into a space at the end of the pipe. Velocity of the air flowing in the pipe, temperature of the surrounding air, and distance all play an important part in temperature loss. The temperature loss in a 4 in, diameter pipe is much more rapid than in a 6 in, pipe under the same conditions, and the loss in a 3 in, pipe is greater than in a 4 in, pipe,

The ratio of area to circumference of a 4 in, pipe is 1 to 1, whereas, the ratio of a 6 in, pipe is 1.5 to 1, and a 3 in, pipe is .75 to 1. The greater the ratio, the lower the rate of duct loss, and for this reason the 4 in, pipe temperature drop per foot is greater than that of a 6 in, pipe.

Temperature drop is not a constant value as it will vary with the velocity of the air in the pipe and also

with the surrounding air temperature. The values in Manual 10 are based on the supply pipes passing through areas where approximately 70 degree temperatures prevail and it is specified that basement areas and crawl space areas be heated with these systems. There is a second reason for heating these spaces and that is to assure warm floor temperatures in the rooms above and to add further to the comfort of the occupants.

These systems provide their great degree of comfort by discharging the warm air upward over large glass areas and outside wall surfaces in such a manner as to prevent the downward drift of cold air. If the cold air can be prevented from falling to the floor by proper location of diffusers (and many heating engineers prefer the floor type) there will be no need for elaborate cold air collective systems, such as have been used in the past. There will be no cold air on the floor to collect, and in most cases a single inlet near the center of the building will suffice for returning the air to the unit for reheating.

The return air intake (not the cold air return) may be placed either high or low in the wall, or it may be placed in the floor or ceiling. Preference has been expressed for the high wall and ceiling locations, for in these places they do not cause large quantities of air to be passed over occupants. The high locations also tend to even the temperature differential by constantly removing the higher temperature air from the upper level, and returning it to the lower level, through the supply system.

#### Factors for Consideration in Small Pipe Systems

Constant air circulation is important with any good forced air job, and it is just as important with the small pipe perimeter system. Constant air circulation will stop stratification, will supply heated air to the more distant outlets constantly, and will prevent cold air from accumulating on the floor. The cost of operation will be no greater with CAC than with intermittent operation, but the comfort level will be greatly improved.

The noise level in the small pipe system is surprisingly



TWO-DECK TAKE-OFF PLAN for a low velocity small pipe system, where plenum space is restricted

# Sheet Metal Distributors Require Technical Know-How

Controlled air conditioning within a building is fast forcing the sheet metal distributor and roofing contractor to become first class technicians

According to C. H. Bickell, The Barrett Division of Allied Chemical & Dye Corp., in a speech before the Sheet Metal Distributors' Association, a sheet metal contractor should understand thoroughly the advantages and weaknesses of the material he is using if he is to install a satisfactory and long-lasting job. There has been a considerable increase in the number and types of new materials in the past few years, all of which may add to or detract from the effectiveness of the installation, unless due consideration is given to the variable conditions involved.

Continuing in his remarks, Bickell said, "Another item which has much to do with the successful performance of any job is the type of building, that is, what it is to be used for and what conditions prevail within that building. Many consumer products, such as textiles, must be manufactured under controlled conditions of humidity. As a consequence, many textile mills maintain a different atmosphere indoors than that which prevails outdoors. They are air-cooled and conditioned, sprinklered or vaporized in order to facilitate the processing of the goods. All such developments have a pronounced effect upon the structural roof deck, insulation, roofing material and metal work installed in conjunction therewith. This must be given serious consideration beforehand so that precautions may be taken when recommending or installing the roof and sheet metal work.

"These developments have brought about a change in thinking and have even altered long-standing concepts and practices. When these unusual conditions are encountered, contractors must be ready to offer proven solutions and be in a position to defend their position.

"Sheet metal men should be familiar with the deterioration of both roofing and sheet metal materials caused by condensation as a result of vapor penetration from within a building, and should make recommendations to protect materials and workmanship wherever possible.

"Embarrasing situations have developed where the owner has held the roofer and the sheet metal man responsible for conditions over which they had no control, but which they should have recognized before bidding the job. The owner will lay the problem right in the contractor's lap, and if he can't back up his argument with tangible evidence that what he says is correct, he will find himself on the short end, faced with an expensive repair on which he will have to absorb the cost.

"A good job, a reasonable profit and a well-satisfied customer is the basis on which all successful businesses

operate. The sheet metal contractor should make it his business to familiarize himself with all branches of his own business as well as those of related trades with whose work he may come in contact. He will never regret any time or effort which he puts into acquiring this knowledge. It will pay off handsomely in the long run."

#### Using Low Velocity -

(Continued from page 36)

low and it has been the experience of all who are making proper installations that the noise level is no higher than in the larger pipe systems, and in many instances it is less.

The selection of the furnace size should be made as closely as possible to a correctly calculated heat loss estimate. There is no room for "guestimates" with a small pipe system. The mechanic making a small pipe installation is working very near the maximum Btu delivery line, and there is very little latitude for balancing to cover errors of heat loss calculation, or of duct design, that prevails in the larger pipe systems.

A minimum number of warm air supply ducts should be used for any given size of unit. This minimum is determined by dividing the furnace bonnet rating by 9000 Btuh. Such arrangement is necessary to assure means of holding the bonnet temperature near design conditions and to maintain satisfactory operating efficiency.

There is no doubt but that the small pipe system has set a trend and that in the not too distant future all systems will be designed for smaller pipes than have been used in the past, and that even higher static pressures and bonnet temperatures will be used, with still smaller pipes. This will undoubtedly necessitate changes in furnace and blower design to maintain efficiency.

#### **Opens New Warm Air Fields**

There are some who have expressed the opinion that the perimeter system and the small pipe system will put them out of business. This the writer does not believe to be true. These systems have opened new fields for the warm air system which could not have been touched with the old system. Therefore, there are more units to be sold and installed, and each of these requires the service of the warm air heating contractor.

The most important single piece of equipment that goes into a modern home is its heating system. The warm air industry has the "know-how" and the equipment to do a good job, and has established an enviable prestige.

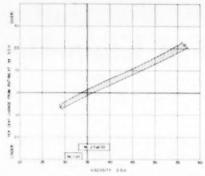


FIG. 1—EFFECTS OF OIL viscosity (in Seconds Saybolt Universal) on nozzle output at constant line pressure

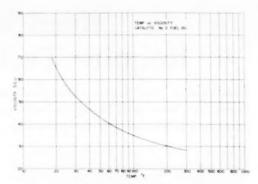


FIG. 2—WITH THE INCREASE of nozzle temperature after the oil is ignited, the viscosity is decreased

### **How Oil Burner Nozzles Perform**

Eugene O. Olson Chief Engineer, Delavan Mfg. Co.

THE PERFORMANCE OF low capacity atomizing nozzles is dependent upon the quality of the oil which is supplied. In this article, only the main physical properties of fuel oil will be considered, showing their effect on nozzle performance.

Probably the most familiar physical property of fuel oil is its gravity. Gravity is simply an indication of the weight per gallon of the oil, and to a large extent determines the heat content of the oil. The lower the API gravity, the greater the heat content of the oil per gallon. If all other pertinent physical properties remain constant, a change in the gravity of fuel oil will not affect the volumetric discharge from a nozzle to any appreciable extent. With a lower API gravity, however, the same volumetric discharge will deliver a greater fuel input to the unit for the reason given above.

The flash point and distillation range of the fuel oil do not affect nozzle performance as such, but they do have a definite bearing on the burning quality of the oil. The combustion characteristics of a given burner equipped with a given nozzle can be changed considerably by changing this property of the fuel oil supplied. This is particularly true of low capacity burners.

#### Effects of Viscosity on Nozzle Performance

The viscosity of fuel oil is the most important single physical property affecting the performance of nozzles. Viscosity is the internal friction of the oil. It is a term given to the measurement of the resistance to flow. In Small capacity oil burner nozzles are affected by the flow characteristics of fuel oil more than are larger sized nozzles. The Reynolds Number and how it affects nozzle performance is explained. This article concludes the paper presented by Mr. Olson at the 29th OHI annual meeting

the petroleum industry, viscosity of fuel oil is usually given in terms of Seconds Saybolt Universal (SSU). An increase in viscosity means an increase in the amount of energy required to move the oil in the swirl chamber. In a nozzle operating at a constant line pressure, there will be a consequent reduction in the velocity in the swirl chamber and the orifice, resulting in less energy being available at the orifice to break up the oil. This results in larger droplets in the spray and narrower spray angles which produce smoky, unstable fires and may result in noise and pulsation. These effects are especially noticeable in low capacity nozzles. The Bureau of Standards' specifications for domestic fuel oils recognizes the limitations of small size nozzles and has set a maximum value for viscosity for #2 oil of 40 SSU at 100 F. This is too high for nozzles under 1.00 gph for best performance but down to 1.00 gph that specification is satisfactory.

The effect of increased viscosity on spray angle and particle size can in many cases be minimized by increasing the oil pressure on the nozzle. This simply makes

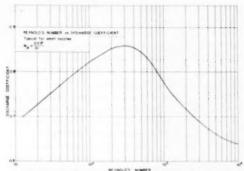


FIG. 3-A TYPICAL Reynolds Number discharge coefficient for a nozzle

up for energy lost in overcoming the internal friction of the oil itself and assists in establishing stable sprays and normal droplet size. Different sizes and designs of nozzles show different degrees of spray angle change, and no general rule can be given. However, wide spray angles are generally more stable with high viscosity oil than are the narrower spray angles.

Another important effect of viscosity on performance of pressure atomizing nozzles is the change it causes in flow rate from the nozzle. An increase in the viscosity of the fuel oil produces an increase in the discharge rate from the nozzle at the same line pressure. Similarly, a decrease in viscosity either by heating or by changing to a lighter grade of fuel will produce a decrease in the flow rate of the nozzle. These changes are indicated by Fig. 1. As an example, consider a nozzle calibrated at a viscosity of 35 SSU and 100 psi. If this nozzle is used on a fuel oil with a viscosity of 45 SSU, the flow rate will be increased by approximately 10 per cent. In other words, a nozzle calibrated at 2.00 gph at 35 SSU would flow 2.20 gph on the 45 SSU oil.

Under operating conditions the nozzle in the oil burner will be heated well above 100 F and consequently the oil passing through it will be heated to a higher temperature also. The result will be a decrease in the flow rate of the nozzle due to the decrease in the viscosity of the oil when it is heated, see Fig. 2.

This effect of viscosity on the flow rate of a nozzle may not seem reasonable at first glance. Any reduction in the rotational velocity in the swirl chamber or the orifice, due to increased viscosity, will result in reduced centrifugal force acting on the oil in the orifice. The result will be a "thicker" wall on the tube of oil extending through the orifice. With a sufficient increase in viscosity, the orifice will fill completely with oil and it is reasonable to suppose that the flow rate will therefore be increased with no increase in the line pressure. By considering the converse situation in which we reduce the viscosity of the oil and thereby increase the rotational velocity in the swirl chamber and orifice, it is reasonable that the tube of oil extending through the orifice will have a thinner wall, giving less cross section to the oil traveling through the orifice, and resulting in a lower flow rate.

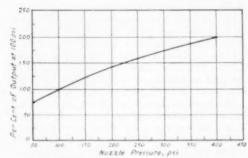


FIG. 4-NOZZLE OUTPUT does not vary in direct proportion to the change in ratio between the nozzle pressure and the operating pressure

#### The Reynolds Number and Its Functions

A mathematical criterion of the performance of the nozzle in this respect, however, is to be found in the Reynolds Number:

 $DV \rho / \mu$  where D is the orifice diameter; V is the velocity in the orifice;  $\rho$  is the density of the oil;  $\mu$  is the absolute viscosity of the oil.

All of these terms must be expressed in consistent units. The discharge coefficient of a nozzle is a function of the Reynolds Number and it happens that in the viscosity range in which we are operating, and for most designs of nozzles in the oil burner field, a decrease in the Reynolds number results in an increase in the discharge coefficient. This would indicate increased flow. Referring to the curve in Fig. 3 the operating range is between Reynolds Numbers of 1000 and 5000.

One of the most important properties of fuel oil as concerns small nozzle performance is the dirt, tar, and sludge content. It goes without saying that any nozzle, and especially a small nozzle, will operate more satisfactorily on clean oil than on contaminated oil. Not only do we recommend adequate line filters, but also adequate nozzle protection against contamination.

Under some conditions, such as with high viscosity fuel oils, it is desirable to increase the pump pressure in order to improve operation of the burner. Under these conditions it is helpful to know what flow rate can be expected at various pressures. The curve in Fig. 4 shows the percentage change in flow rate that will be expected when operating at pressures other than 100 psi. The flow rate at any given pressure can be calculated by the following formula:

 $F_1 = F_1 (P_1/P_1)$ 

where  $P_1$  = pressure at which nozzle was calibrated, usually 100 psi:  $P_2$  = any pressure at which it is desired to operate a nozzle other than the calibration pressure; F1 = calibrated flow at pressure  $P_1$ ;  $F_2 =$  flow rate at pressure  $P_2$ .

Example: A 1.00 gph nozzle calibrated at 100 psi is to be used at 125 psi.

$$F_{123} = 1.00 (125/100) \pm 1.12 \text{ gph}$$

This relationship is approximately true for nozzles in the range used for oil burners but not exactly so. It is close enough, however, for field calculations.

#### Hollow Cone and Full Cone Sprays

The two basic spray patterns for oil burner nozzles are the hollow cone and the full cone, sometimes known as solid cone. In the hollow cone type of spray, the oil droplets are delivered at the outer edges of the cone with very little, if any, spray in the center. With the full rone type of spray the oil is delivered in a rather uniform pattern across the entire cross section of spray.

The reasons for the two types of spray are to be found in burner construction. In some burners the air delivery is such that they must use a hollow cone type of spray because there is no air delivered in the center of the cone, and for that reason any oil delivered there would result in smoky combustion. Other burners deliver the air in a pattern which gives best performance with a full cone type of spray. Fortunately, most burners are not too critical in this respect and one type or the other may do for all the needs of many servicemen. Most of the recent developments in "high efficiency" combustion heads require one type or the other for satisfactory operation. In those cases the recommendation of the burner manufacturer should be followed.

In flow rates above 2.00 gph many fuel oil servicemen find that full cone nozzles give smoother ignition than the hollow cone in most burners. Some burners in this size, however, are designed for hollow cone nozzle use for best results and that type should be furnished.

The users of nozzles are no doubt interested in how nozzles are tested and calibrated. It is not necessary to describe the methods used or the reasons for using them. Every nozzle is spray tested and checked for flow rate, spray angle, and for spray quality.

Flow rate is maintained within limits of plus or minus 5 per cent of each nominal size. This is usually sufficiently close for oil burner application. In order to be sure of calibration, it is necessary to control the temperature and viscosity of the test oil within close limits. It is also necessary to use precisely calibrated pressure gages, and flow measuring instruments. Even the best of test equipment has inherent errors and these errors will be reflected in the differences in calibration between

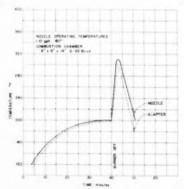


FIG. 5—NOZZLE TEMPERATURES vary over a wide range, depending upon the firing rate and the length of time the burner operates

nozzle manufacturers, even though they used identical test liquid specifications.

Spray angles are maintained within 5 degrees of the nominal marking by most manufacturers. By good spray quality is meant uniform spray distribution, freedom from streaks in the spray and satisfactory droplet size.

#### The Importance of Droplet Size

The size range of droplets in a normal good 1.00 gph nozzle is about 10 to 200 microns. The mass median droplet diameter is about 50 microns. (A micron is one millionth of a meter or approximately 0.00004 in.) Unfortunately there is no way as yet to measure commercially or indicate the droplet size in a spray from a nozzle. It is a simple matter, however, to determine whether or not the droplet size in a spray is satisfactory. This can be done by the simple expedient of fire testing under normal burner conditions.

Under operating conditions the nozzle in an oil burner will be heated well above the room temperature by the heat from the flame and from the combustion chamber. A number of researchers have checked nozzle temperatures and have come up with varying results, mostly dependent upon the type of combustion head being used in the particular burner tested. The temperature of the nozzle will seldom go above 250 F during operation. It may go up to 350 or 400 F, however, during the first five minutes after shutdown, see Fig. 5. At that time the oil in the nozzle is stagnant, and therefore when it is heated it will deposit sludge and varnish in the passages of the nozzle. This is especially true if the oil has a high sludging tendency or contains a high percentage of gums and tars. The result of this condition is a reduction in the flow rate from the nozzle and a distortion of the spray pattern, resulting in decreased efficiency of the unit, and in some cases, insufficient heat. Low capacity nozzles generally run at a higher temperature than larger nozzles because the hot back wall of the combustion chamber is nearer the nozzle in small units. The cooling effect of the oil flowing through the nozzles is also less with low flows.

#### Recommendations for Nozzle Care

A discussion of nozzles should logically close with some suggestions on the care and handling of nozzles. Bear in mind the fact that the passages in fractional gallonage nozzles are extremely small, so small that a little lint is all that is required to reduce the flow and give undesirable spray characteristics.

These suggestions may save a service man some trouble:

- Always handle and store small nozzles with the strainer or filter attached.
  - 2) Leave the nozzles in the containers until needed.
  - 3) Don't carry nozzles in your pockets.
  - 1) Use clean tools on nozzles.
  - 5) Provide an adequate line filter on each job.
  - 6) Be sure the seat on the adapter is in good condition.

(This article is the second on the Performance of Pressure Atomizing Nozzles. The first appeared in the July AMERICAN ARTISAN).



THE MAN-TO-MAN conference between employer and employee is one of the surest methods of getting valuable suggestions for the over-all benefit to the firm

# Putting Employees' Ideas to Work

If you wish to save money and to find an easier way to do a job, go among your employees and ask for their opinions based upon daily experiences and you'll be adequately rewarded for this confidence, says Lawrence E. Gichner, sheet metal contractor

PROGRESSIVE EXECUTIVES WHO are continuously searching for ideas to improve their business should keep their office door open to their employees. They can prove to be a valuable source for suggestions and new ideas.

Techniques for obtaining these ideas vary, but the personal interview is the most effective. Asking for written suggestions has proved to be the least yielding in results. Most employees prefer the easier method of talking, rather than the more laborious technique of recording suggestions on paper. The employer should give the employees the chance to talk.

Some employers have the extremely foolish attitude of resenting recommendations made by others. They reject such ideas as being an infringement on their domain, from where all instruction is supposed to originate and flow. Those who are more concerned with their firm's progress will readily apply some of the thoughts expressed by their associates.

#### **Encouraging Employees to Talk**

The best way to encourage employees to express their ideas freely is to convince them that their interest is desired and appreciated. This can be done by putting

their ideas to work as quickly as possible, and by announcing to fellow-employees which one of them had made the suggestion and why it was considered worth-

The originator of the recommendation is naturally pleased that his idea has been considered suitable for adoption, and is thus encouraged to make further suggestions. The other employees, seeing that "one of them" has been recognized, are encouraged to offer some opinions of their own.

Deserving ideas that have proven applicable should be appropriately rewarded; also, the fact that a man has had a personal voice in the operation of the business for which he works is in itself a satisfactory compen-

One method found to be very effective is to sit down in the office with the employee, and on a 3 x 5 file card, record and itemize his recommendations. The card is dated for future reference, and from time to time, it is shown to the employee, his suggestions are pointed out, especially those which have been utilized. The dating is important because sometimes from three to four years elapse before the suggestion may be used, based upon the feasibility of the idea to apply—e.g. expanding garage facilities or buying a new dual-purpose machine tool.

Do not attempt to belittle an employee's suggestion, or become angry with an employee whose expressions give you a kick in your mental pants. If you hurt his pride he may never again offer any further suggestions. Remember that he, in all probability, is sincere, and in

(Please turn to page 63)

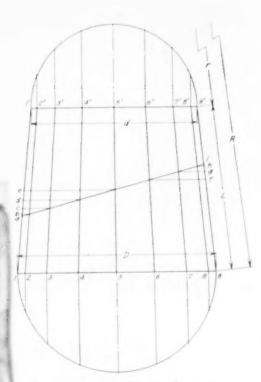


FIG. 1—BASIC ELEVATION required for determination of pattern development, showing d, D, L, and R lines

		FORMULAE	_		
$I. R = \frac{L \cdot D}{D - d}$	6.	$\beta = \frac{\alpha c}{4}$	for	half	patterns
2. r=R-L	7	H = R(1-cos	(3) "	10	16
3. X = 211R		h= r (1-cos		2.6	.66
4. Y = #D		C = R.sinB		**	**
5. \( \alpha = \frac{360 \cdot \gamma}{3}	10.	c= risin,B	66	**	**

THE FIVE FORMULAS required to accomplish the pattern development for conic sections

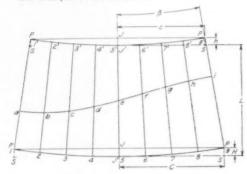


FIG. 2—ARC CONSTRUCTION for upper and lower base of the cone pattern

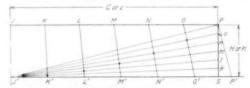


FIG. 3—METHOD OF OBTAINING the arcs in Fig. 2. Lines drawn in all four rectangles are joined to indicated base points

# Making a Conic Section the Easy Way

DEVELOPMENT OF PATTERNS for conic sections is usually accomplished by radial line development or triangulation. However, there are occasions when a third method may be employed to advantage for developing patterns where space is limited and accuracy required,

An illustrative example is presented to facilitate the explanation of the operations or steps involved. It is admitted that seldom do actual problems consist of simple convenient values for d, D, and L, as are used for the solution of the example problem.

Step 1—Construct an elevation as in Fig. 1, the same as required by other methods. Further, project intersection of various elements and miter line (s) to the outer or true length elements, as shown

Step 2—Assuming d=20 in., D=30 in., and L=60 in.,

Conic section pattern development, ordinarily done either by the radial line or triangulation methods, may also be accomplished by the following means, especially where little space exists and precision is a requisite

we find, by using Formula 1, the radius R or true length of the elements of the complete right cone with a base D in. diameter to be,  $R=(L\times D) \ / \ (D-d)$ , or  $(60\times 30) \ / \ (30-20)=180$  in.

Step 3—Formula 2 gives the radius for the truncation of the cone, r=R-L, or r=180-60=120 in,

Step 4—The circumference of a circle with R radius is, x=2  $\pi$   $R=2\times 3.1416\times 180=1130.96$  in.

Step 5—The circumference of the base of the cone with D

diameter is,  $Y = \pi D = 3.1416 \times 30 = 94.2480$  in.

Step 6—Then the central angle subtended by a full pattern for a cone with a base of D diameter is (Formula 5),  $\alpha = (360 \times Y) / x = (360 \times 94.2480) / (1130.976) = 30$ 

Step 7—From Formula 6 we find the central angle  $\beta$  subtended by base D, for a  $V_4$  pattern, as shown in the half pattern development in Fig. 2, to be:  $\beta = \alpha/4 = 30/4 = 71/2^{\circ}$ .

In actual practice a considerable time may be saved by eliminating steps 4, 5, and 6 above, and using a new formula not shown in the table, as follows:  $\beta=(45\times D)/R$ . This is obtained by combining formulas 3, 4, 5, and 6, as follows: By substituting in Formula 5, we get,  $a=(360\times Y)/x=(360\times y)/x$ 

Step 8 – From Step 7, H=R (1 –  $\cos\beta$ ) = 180 (1 –  $\cos$  7½) = 180 (1 – 0.99144) or  $H=(180\times0.00856)$  = 1.5408 in. Any trigonometric tables may be used to obtain the sine and cosine of the central angles

Step 9—From Step 8, h=r (1 —  $\cos \beta$ ) = 120 (1 —  $\cos 7\frac{1}{2}$ ) = 120 (1 — 0.099144), or  $h=120\times0.00856=1.0272$ 

Step 10—From Step 9,  $C = R \times \sin \beta = 180 \times \sin 7\frac{1}{2} = 180 \times 0.13053 = 23.4954$  in.

Step 11—From Step 10,  $c = r \times \sin \beta = 120 \times \sin 7\frac{1}{2}$  =  $120 \times 0.13053 = 15.6636$  in.

Step 12—This step consists of constructing the arcs for the upper and lower bases of the pattern for the cone, as shown in Fig. 2. First the center line is erected and rectangles constructed, using C. H and c, h distances for the respective sides. Four rec

tangles are required.

Following this, Fig. 3 illustrates the method for obtaining the arcs in all four rectangles. Lines are drawn from F to P, after which perpendiculars P, P' are erected to FP. Next lines FP, FP FP FP FP

J'P' and PS are divided into the same number of equal spaces respectively, and lines drawn as shown. The points of intersection of KK' and J'K, LL' and J'I, etc. are points determining

the arcs which may now be drawn.

Step 13—Lay out equal spaces on the arcs for locating the elements of the pattern and draw in said elements 1'1, 2'2, etc.

Step 14 Transfer the true lengths of the various respective elements from the elevation to the pattern layout to establish the miter line (s) and complete the development

Those familiar with the use of logarithms or slide rules will find these tools invaluable in making the above calculations.

#### Sale of Residential Air Conditioning Helped by Heat Wave

This Year's Early Summer record breaking heat waves have made the selling of packaged air conditioning an easy job. Chicago. St. Louis. Detroit and many other cities report that available stocks of all types of residential cooling equipment had been exhausted before July 1. This shows a desire by the public to seek relief from heat in summer as well as from cold in winter.

What will be next summer's demand? It's hard to say, but based upon this year's acceptance of residential cooling, it would be well to consider plans that will keep the recent heat wave fresh in the public's mind. Plan now to promote residential cooling along with the sale of furnaces or with repairs on existing heating plants. If you are uncertain how to push this type of sales campaign, consult your wholesaler or manufacturer. For example, the American Radiator and Standard Sanitary Corp., Pittsburgh, has recently released a Year 'Round Air Conditioning Promotion Package that includes suggestions on how to start a selling program. The package includes direct mailing pieces, handout folders, trade advertising, and a pertinent application manual.

#### Putting Employees' Ideas to Work -

(Continued from page 61)

spite of the apparent implications, he may be right. But regardless of how unfair, unworkable, or unrealistic his suggestion may be, the most harmful thing is to cut him off before he has completely expressed his thoughts.

#### Effectiveness of Group Discussion

An effective way of screening ideas is to get a group of employees together for a general discussion. One man's comments give encouragement to another who will speak out and express a different side of the picture. If a suggestion is not practical, other employees are very likely to spot the fallacy and mention it, as well as adding some comment that may make the original idea workable; then everyone is happy over the part he has played in the development toward a better organization. If an idea is not workable, then the participation of the group keeps the chairman from having to criticize and be blamed for the failure of accepting an idea. In running a meeting it is well to keep conversations rolling, in order to prevent it from becoming a monologue. The executive's task is to lead the conference, not to dominate it. This can be done by stimulating others to do the talking.

Having a prepared program of the points to be discussed is particularly helpful; these points should be either read at the beginning of the session, or a typewritten copy placed in everyone's hands.

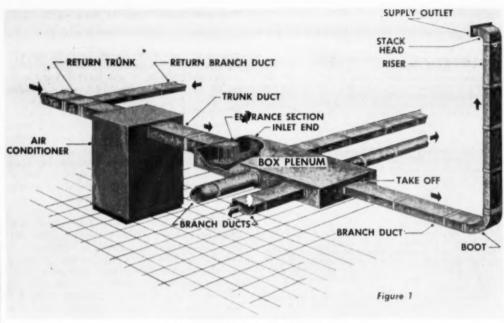
#### **Brief Meetings More Effective**

Short meetings (not over forty-five minutes duration) are the most effective. Efficiency drops after that time, and interest will lag. It is an excellent idea to leave something held over for the next meeting.

A man who has spent his entire working career at the bench or on the job may not be aware that there is a better way of performing his job. He may even halk at attempting to do it another way. Frequently he will find all kinds of objections why it should not and cannot be done in any other manner than the way in which he has been doing it, but in an organization that is alert to progressive methods, he becomes imbued with the spirit, and is willing to try another technique more readily.

Leadership and originality must come from top management, but there are many valuable ideas to be found in the minds of one's associates. The mechanic, from actual experience, has practical ideas for efficiently improving the methods being used on his job.

Personal conferences give an opportunity to become better acquainted with the employee, to learn a man's likes or dislikes, and to sound out his actual attitude toward the organization for which he works. Practically everyone has his personal opinions and it is far better to have them expressed openly where something can be done constructively about them, and for the good of all concerned.



NOMENCLATURE FOR a Box-Plenum System

# Box-Plenums For Air Conditioning Have Wide Application

Distribution systems of the box plenum type are easily adapted to houses with or without basements and where attic space is limited. The American Gas Association through its Committee on Domestic Gas Research explains the methods used to obtain a good layout for several different types of structures.

THE COST OF THIS TYPE of supply duct system is generally less than that of a trunk duct system, because the plenum is of rectangular construction without transition sections and the branch ducts are butted to the boxplenum, thus eliminating intricate takeoff fittings,

The usual components of this system are:

1. A trunk duct leading from the conditioner to the box-plenum

2. An air distributing compartment of simple, rectangular construction, designated as a box-plenum  Individual branch duets leading from the boxplenum to the supply outlets located in the various rooms of the residence

The design procedure given applies to residential air conditioning systems for winter, summer, or all-year operation. This procedure may be used to design systems utilizing self-contained air conditioning units as well as systems which are built up from various components selected and assembled by the contractor.

#### Location of the Box-Plenum Varies with House

The box-plenum serves as a central air distributing compartment for the branch ducts that lead to the supply outlets in the various rooms of the residence; consequently, the plenum should be installed at some central position in the residence. Typical installations are shown in Figs. 1. 2, and 3.

A basement installation of a box-plenum is shown in Fig. 1. The box-plenum serves here as a central air

distributing compartment for a conditioner that is not centrally located in the basement.

An application of the box-plenum system to a basementless house is shown in Fig. 2. The box-plenum is installed just below the ceiling joists in the hall, and the branch ducts have short, horizontal runs to the various rooms. Ordinarily the box-plenum can be accommodated in this location by dropping the hall ceiling no more than 12 in.

Fig. 3 shows a box-plenum installed in the attic of a basementless house. Connection of the trunk duct to the end of the plenum is required for good performance. The branch ducts can be connected to ceiling diffusers, high sidewall registers, or to a ceiling panel. The ductwork in the attic space should be insulated.

The trunk duct should be run as direct as possible sharp turns and sudden changes in cross-section should be avoided. If it is desirable to change the size or shape of the trunk duct at some point between the conditioner and the box-plenum, a change in either width or depth should be gradual, held to 1 in. for every 4 in. of length. This keeps resistance to a minimum.

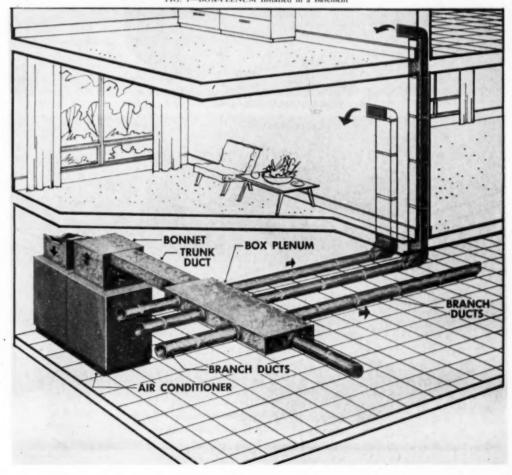
The depth of the trunk duct at the point of connection with the box-plenum should be equal to the plenum depth. Also, the trunk duct should preferably be connected at the center of the inlet end of the plenum.

In certain installations, it will be possible to eliminate the trunk duct by connecting the box-plenum directly to the conditioner.

#### Available Space Determines Box-Plenum Size

The depth of the box-plenum should be about 2 in. greater than the greatest depth of branch duct to be connected to the sides or end of the box-plenum. For example, suppose that the greatest depth of branch duct is to be 8 in. If the box-plenum is made 10 in. deep, and if the 8 in. deep takeoff is centered between the top and bottom of the plenum, 1 in. will be available for making the connection.

FIG. 1-BOX-PLENUM Installed in a Basement



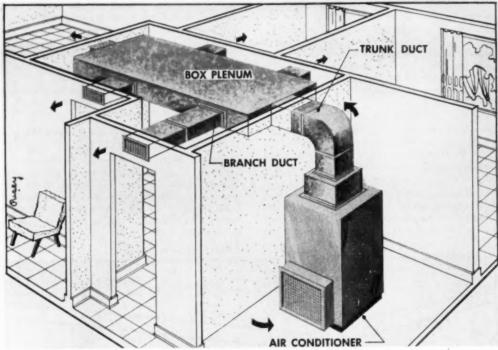


FIG. 2-BOX-PLENUM Installed in the Ceiling of a Hall

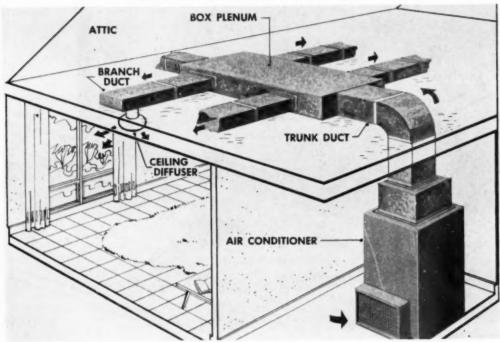


FIG. 3-BOX-PLENUM Installed in an Attic

The width of the box-plenum will often be determined by the availability of space. The optimum width is about 2½ times the width of the trunk duct where it connects with the plenum. The permissible range is from 2 to 3 times the trunk duct width. Exceeding the width of 3 times that of the trunk duct will result in a waste of materials. However, the plenum width should not be less than the stated minimum, because undesirable high velocities will exist in the plenum and difficulty will be experienced in balancing the system.

The length of the box-plenum should be between one and three times the width of the plenum, twice the plenum width being a favorable value for many applications. Since this large range permits considerable latitude in the selection of the length for a given application, it can be determined to a great extent by such factors as the amount of space available and convenience in making the ductwork connections.

#### Plenum Takeoffs Stress Simplicity

The simplest possible type of takeoff can be used. Collars similar to those used as bonnet takeoffs with gravity warm air systems are suitable as takeoffs for round branch ducts. Rectangular branch ducts can be butted to the plenum with flanged connections.

Although the takeoffs are preferably located on the sides or end of the box-plenum, they can be installed on the top or bottom without detrimental effect on the performance of the duct system.

The plenum takeffs must not extend into the plenum, since roughness or interior projection might adversely

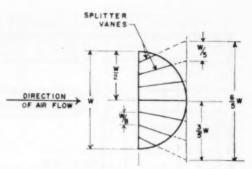


FIG. 4—DETAILS of the Entrance Section of a Box-Plenum affect the operation of the system. Also, they should not be installed on, or close to, the inlet end.

#### Return-air Duct System

The use of a box-plenum in the return-air duct system is usually not feasible. Therefore, the design procedure presented is that normally used for conventional returnair duct systems.

#### Entrance Section of Box-Plenum

The entrance section consists of seven splitter vanes soldered or riveted to two semi-circular sheet metal plates. The layout and fabrication details are illustrated in Fig. 4.

The use of this entrance prevents excessive pressure losses and prevents difficulties in balancing the system.

# Welding Time Halved on Blower Housings

By USING MANUAL hidden are welding, Buffalo Forge Company, Buffalo, N.Y., fabricator of diversified industrial exhausters of all sizes, recently slashed welding time as much as 50 per cent on from 8 to 12 gauge mild steel sheet metal housings. Housings were previously welded entirely by regular open arc hand welding. Besides this substantial time saving, labor for removal of weld spatter is virtually eliminated.

Housings are fabricated of pieces known as the scroll or rolled section and sides. These are respectively rolled to size, circle sheared and index punched. Assembly begins with tack welds about every 8 in. Then with the work rotating on a positioner, the operator holds the welding gun of a Manual Lincolnweld unit stationary while the work rotates underneath. Speed of weld is about 40 in. a minute, using 5/64" L 60 wire, 760 flux, at about 258 amps. The high current density on this relatively small diameter welding provides a high electrode burn off rate which permits rapid weld metal deposition and, hence, rapid welding speeds. The automatic wire feed of the process guarantees uniform quality welds.

The 300 ampere generator at this welding station is

used for both tack welding and manual hidden are welding providing economical operation of the equipment.



USING AN ARONSON rotating positioner, the scroll and sides of blower housing, tack welded about every 8 in., are fillet welded at the rate of about 40 in. per minute with a Manual Lincolnweld unit

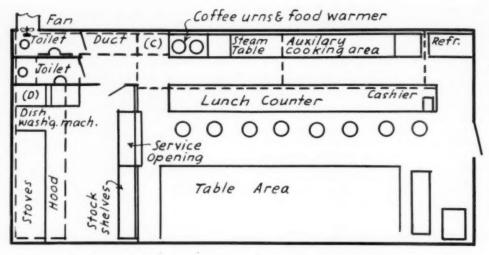


FIG. 1-FLOOR PLAN of lunchroom showing the hood arrangement and duct assembly

# Stainless Steel Rejuvenates Run-Down Lunchroom

When installing exhaust hoods and duct systems in quick lunchrooms, it is easy to modernize the walls behind ranges and other cooking equipment with stainless steel paneling. Ernest E. Zideck, sheet metal consulting engineer, describes such a job

THE BUILDING OUTLINED in Fig. 1 was 20 years old and losing business with each passing month — partly because its customers were getting tired of seeing the same paint-laden walls and smelling the usual cooking odors rommon to unventilated eating places.

The dotted lines of this drawing indicate where stainless steel hoods and ductwork were installed to provide adequate exhaust of odors and moisture-laden air. One main exhaust fan was connected to a common plenum in the washroom. Each of the three hoods was connected to this plenum by its own duct. The fan was discharged into a duct that penetrated the outside wall and terminated at a point above the roof.

When it was decided to install exhaust hoods, the farsighted sheet metal contractor suggested that stainless steel be used to cover the walls behind the kitchen range and dishwashing machine along with an entire back wall for the coffee urns and auxiliary cooking range in the dining area.

The planning of this work involved a number of important items:

- 1. It was impractical to do very much fabricating of work on the premises. (The whole job had to be completed in the shop, assembled experimentally to be sure of each component fitting correctly, and then brought in piecemeal and reassembled without undue loss of time and inconvenience to the customers).
- Installing the paneling required that the stoves, urns, steam table and wash tubs be moved and various utilities disconnected.
- The wall paneling had to be installed first to allow the back section of the hoods to be connected to the wall sections.
- 1. The plaster on the walls to be lined with sheet metal presented an uneven surface (many small depressions and noticeable humps). The metal would not hang against this type of wall and give the impression of a first-class job; it had to be fastened in a manner that would leave it straight and even. Nails and screw heads must not show.
  - 5. The changing temperatures above the hot stoves and

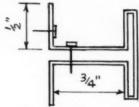


FIG. 2—HOLDING STRIP made of stainless steel strip, permitting fastening from the top as each panel was put into place

steam table would tend to react on the metal, expanding it one time and contracting it at another and if nails or screws were used, this action would cause the fastener to increase the size of holes in the sheets.

6. Cooking vapors would condense on the metal walls and soon fill any openings left unscaled. Although in the isolated kitchen, the appearance of the paneling would not be too important, in the dining area it would be a major consideration.

#### Panel Construction of Stainless Sheet

Each panel was made from an 18 in, width of stainless steel sheet. The flange formation used  $2\frac{1}{4}$  in, leaving  $15\frac{3}{4}$  in, for the calculated height of the horizontal panels. Only the four corners of the sheet were notched out for flange formation. Labor expended in this panel making was moderate in view of the case of the installation procedure. Flanging was done on a sharp bend, slightly past 90 deg, to make the panels close tight against one another. The holding strip was more difficult to make, owing to its peculiar formation and the necessity of accurate dimensions. These dimensions correspond to flange dimensions of the  $15\frac{3}{4}$  in, panels.

The holding strip, Fig. 2, was made of stainless steel strip, as illustrated, to permit fastening from the top side as each new panel was put into place. The strip was held in place either by nails or screws placed 12 in apart on the top. Prior to installing, the strip was made more rigid by fastening the two sides together with sheet metal screws every two feet. After the entire wall had been erected, the front of the holding strip was battened down with a block of wood and a mallet. This helped to tighten the panels and presented an even surface to the wall.

A round sealing strip was fastened securely to the floor and against the bottom panel before the equipment was reset.

Figs. 3, 4 and 5 show the types of hoods recommended for each of the three areas to be exhausted. It is interesting to note in Fig. 5 that the top of the hood carries two duets; the auxiliary cooking area duet is above the duet carrying the exhaust from the coffee urn area.

The exhaust hoods were assembled and placed into position to fit exactly the dimensions between the top wall panel and the ceiling. The holding strip was battened into place to provide a tight seal against grease accumulation.

It proved advisable to provide a 1 in. asbestos insulation backing for the hood to prevent a slight chilling effect of cool walls that caused the heated vapors to condense just before entering the exhaust duct.

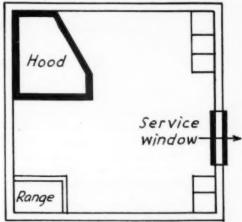


FIG. 3—FLEVATION VIEW of kitchen showing relationship of exhaust hood to range location

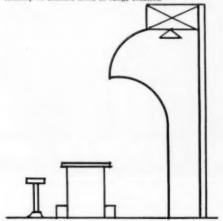


FIG. 4—HOOD OVER AUXILIARY cooking area, showing extended side panel

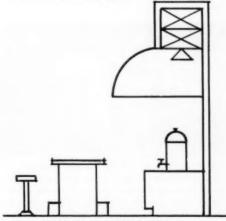


FIG. 5—HOOD OVER COFFEE URNS, equipped with two ducts, one from the auxiliary cooking area

# Carolina Contractors Set Attendance Record

A warm air heating forum was an outstanding feature at the convention of the Carolinas Roofing and Sheet Metal Contractors. With a record 350 in attendance, this group is fast becoming one of the leading associations of the heating trade in the industrial South



SOME OF THE NEW OFFICERS elected for 1955; (back row, l. to r.): Lokie Martin, Josh Ware, Beverly M. Rose, John Stanley, G. A. Stewart, James Barger, all directors; (front row, l. to r.): W. R. Hartin, Jr., director; Julian McKeithan, sec. and treas.; Joe H. Piper, pres.; William Arthur, past pres.



MEMBERS OF THE WARM AIR FORUM who presented the latest techniques for central heating; (back row, L to r.): John W. Norris, W. R. Hartin, Jr., R. J. Bell, Floyd Lytton, Richard White, Edward F. Long, Fritz W. Legler, Robert Foster; (front row): Julian McKeithan, V. D. Ramseur, Jr.

THE CAROLINAS ROOFING AND SHEET METAL Contractors and their sales group have become a real voice for the industry in their immediate states and near-by areas. It is conceded throughout the sheet metal and heating industries that the Carolinas group has come a long way in building itself up to its present industry status. The members constitute an aggressive group of contractors, and new firms are joining the association every year.

A paper covering the advantages of year 'round air conditioning, presented by John W. Norris, Lennox Furnace Co., reached its hearers at an auspicious time, giving it a dual impact, since it was delivered on one of the hottest week ends of 1952. Speaking before the ninth annual convention of the Carolinas Roofing and Sheet Metal Contractors and its sales group, held at Myrtle Beach, S. C., Norris traced the history of warm air heating and how contractors aided its development to its present standing. He covered the proper location of registers and the adjustment of continuous air circulation. Pointing out that a register should be placed so that the warm air stream would not be directed toward persons in the room, but out of their range, the speaker also reviewed the basic principles of perimeter heating in all its forms.

#### Advantages Derived from Perimeter Heating

Defining perimeter heating as a system that puts the heat at the edge or perimeter of a structure, Norris stated that as a result, perimeter heating is not confined solely to the slab type of installation, with ducts embedded in it. He further stated that the aspirating effect of the air stream from a 2 in. by 14 in. register in the floor of a perimeter heating system might be the key to year 'round air conditioning of those homes in the country equipped with perimeter heating systems.

The speaker further stated that he felt that the contractors should always use sheet metal in warm air systems, regardless of the ideas recently being promulgated on sheet metal-less systems, such as those using the crawl space as a plenum. According to Norris, the cost involved in insulation and the vapor barrier would more than equal that of a sheet metal duct system.

#### 1953 Officers for the Carolinas

The annual election and installation of officers took place during the convention. The new officers and directors for the 1952-1953 term include Joe H. Piper, president; W. T. Fort, 1st vice president; R. J. Barnes, 2nd vice president; and Julian McKeithan, secretary and treasurer.

John Stanley, W. R. Hartin, Jr., Linwood Scott, Lokie

Martin, Josh Ware, C. E. Bourne, James Barger, Beverly M. Rose, and G. A. Stewart were elected directors.

#### Warm Air Heating Forum

A panel discussion listed as the "Heating Forum" was one of the more important events of the convention. It was under the direction of V. D. Ramseur, Jr., as moderator, assisted by J. M. McKeithan. A variety of questions were submitted to the moderator who directed them to one of the eight other members of the panel for answering. Due to the wide range of questions asked during this forum, much was accomplished in furthering the contractors' general knowledge of the warm air heating field.

#### More Engineers Sought in Region

A general business meeting comprised one of the sessions of the convention. One speaker was James Pou of North Carolina State College, who talked on the North Carolina Engineering Foundation, Inc., and how it could be utilized to build up a backlog of first rate teachers, research scientists, and extension leaders at various plants in the industrial South. In order to produce more engineers, the foundation has set up plans for securing better pay for professors in technical schools in North Carolina, the capital to be supplied by all the different trades and industries in the state. From the sheet metal trades, the foundation would like to obtain \$2,000. This amount would be assessed from the contractors in the area at the rate of one tenth of one per cent of the contractors' productive pay roll.

Other speakers at this session included Angelo Hoffmann, president of the Sheet Metal Contractors National Association, who called the contractors' attention to the Apprenticeship Program being carried on by the national group as well as what was being accomplished at the local level by some of the state and city associations to further this worthy plan. He also touched on some of



ALL READY FOR a sea food dinner are (1. to r. around the table): Mr. and Mrs. W. R. Hartin, Jr., Mr. and Mrs. H. King, George Braun, Mr. and Mrs. Julian McKeithan, W. R. Hartin, Sr.



SOME MEMBERS OF THE SALES GROUP who were hosts to the Carolina Contractors (back row, I. to r.): G. A. Brown, B. S. Whittington, H. Jones, Chas. E. Graham, George R. Leiter; (front row, I. to r.): Bruce O. Leister, Frank F. Rose, R. D. Cowles.

the work being done by the National Association on warm air heating ordinances, including the steps which have been taken by the Industrial Sheet Metal Committee covering industrial ventilation, as well as the manual being written on basic sheet metal practices,

#### **Fuel Gas Combustion Characteristics Described**

SEVERAL YEARS AGO, the flame research laboratories of the Bureau of Mines discovered the fundamental law of flashback and blowoff. This was followed by basic research of entrainment of primary air in burners. These three principles were correlated into what appears to be a practical method of predicting the stability of flames on burners when fuel gases are changed. Much work remains to be done before general use of the process can be recommended. The necessary investigations currently are in progress as part of government and gas industry research programs.

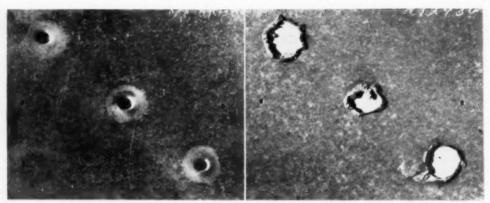
Furnace burners often must perform satisfactorily on various fuel gases which may differ considerably in their combustion characteristics. The difference between the spans of the stable flame zone for any two burners is independent of the fuel gas, according to tests conducted in the A.G.A. Laboratories, which also reported that of all the burner design factors, port spacing probably will influence burner flexibility to the greatest degree. In gen-

eral, ordinary burner design factors do not influence burner flexibility to any great extent.

At present A.G.A. Laboratories are developing an instrument to be used by servicemen to obtain proper burner adjustment but each gas company must obtain data to predetermine the proper adjustments for its local conditions.

#### **New Book Provides Useful Metallurgy Data**

"METALLURGY FOR ENGINEERS," by John Wulff, Howard F. Taylor, and Amos J. Shaler, of the Department of Metallurgy, Massachusetts Institute of Technology, is written to help the reader acquire an adequate understanding of metals so that he may intelligently select and use them. Among the subjects covered are metal cutting, stretching, and bending processes. How to apply the welding techniques and metal working by the compression method is covered in a special section. The book is published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y.



TYPICAL SHEET METAL specimens after weathering in exposure tests, indicating how corrosion around nail holes may result from improper nailing. Different nails were used for each experiment. The sheet metal and length of weather exposure were all identical

# **Avoiding Deterioration of Sheet Metal Building Materials**

Improper methods of installing sheet metal exposed to weather conditions cause deterioration at the point of juncture. Conclusions from recent tests indicate how to avoid early replacement

Two-year atmospheric exposure tests of a number of sheet metals used in building construction have recently been completed by the National Bureau of Standards. Sheets of aluminum and zinc alloys and of aluminum-coated and galvanized steel were exposed to the weather under conditions closely approximating those found in actual practice. Each metal tested was fastened to bare wooden boards with nails of various materials, both with and without neoprene or lead sealing washers between the nail head and the sheet. The study was conducted by T. H. Orem of the NBS corrosion laboratory.

#### Corrosion Problems Studied

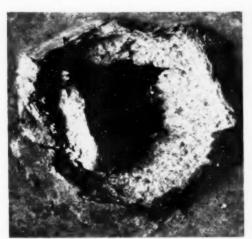
Severe corrosion may occur at the point of nailing if the incorrect technique of nailing is used, even with building sheet that may be otherwise highly serviceable when properly installed. Although other types of nailing will often give good service, the NBS study indicates that, in general, use of aluminum nails and carbon-blackfilled neoprene sealing washers will give the greatest assurance of long trouble-free service, even under severe conditions, when used with metals covered in this report.

The use of sheet metals in building construction has

increased considerably in recent years. Factors determining this increase include the expansion of building construction following World War II, shortages of some of the more regularly used materials, and the productive capacity of the expanded metal-producing industry that became available with the relaxation of military requirements. With this increased use, adequate understanding of associated corrosion problems and of proper fastening techniques has become correspondingly important. The National Bureau of Standards has long been active in building technology investigations, as well as in studies of corrosion problems. The Bureau maintains two atmospheric-exposure test stations, one on the roof of a building at Washington, D. C. and one 10 feet over salt water near Norfolk, Va.

#### Exposure Tests

In the present tests, 3-by-4-in, specimens of different sheet metals, variously fastened, were exposed to weathering at both test stations. Nails of aluminum alloy, bare steel, cadmium-coated steel, galvanized steel, and copper were used with the aluminum alloy, aluminum coated steel, and galvanized sheets. Only bare steel and galvanized nails were used with the zinc-alloy sheets. Sealing washers of both regular neoprene and carbon-black-filled neoprene were investigated, as well as the more usual lead washers. In installing aluminum, good practice calls for a layer of water-resistant building paper or asphalt-impregnated felt between the metal and the wood, but in the NBS tests this protective layer was purposely

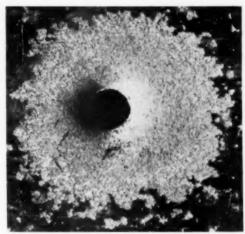


NAIL HOLE in low corrosion resistance metal as a result of improper nailing procedures. Waterproof washers would aid in reducing this condition

omitted. Sufficient sets of specimens were exposed to permit removal of complete sets after 3, 6, 12, and 24 months, and one set is being allowed to remain in the exposure racks for an indefinitely longer period.

Results of the two years' exposure clearly demonstrate the importance of avoiding certain fastening practices, particularly with aluminum. It is well established that aluminum sheet properly installed is a serviceable building material in most climates. But, as the tests show, bare steel nails, or other uncoated nails except aluminum. can cause serious corrosion of the surrounding aluminum. Bare copper nails, furthermore, showed themselves to be even more corrosive than steel nails to the surrounding aluminum - a phenomenon readily appreciated by those familiar with the subject, but one of which some installers of sheet aluminum have apparently been unaware. The cadmium-plated and the galvanized (zinc-coated) nails caused no corrosion while their coatings remained intact. The cadmium itself corroded away in some cases, however, exposing the steel nail, and the zinc showed signs of doing so. Since the steel can begin its corrosive action on the aluminum as soon as the protective coatings have corroded away, the use of cadmium-plated or galvanized-steel nails seems questionable when maximum trouble-free life is desired from aluminum sheet. As would be expected, aluminum nails caused no corrosion of aluminum sheet in the tests.

The aluminum-coated specimens reacted similarly to the aluminum-alloy specimens at both Washington and Norfolk. Neither the galvanized nor the zinc-alloy sheets showed more than slight corrosion of any type under any condition of use. The galvanized sheets showed no corrosion from aluminum, galvanized, and cadmiumplated nails, and only slight corrosion from bare steel and copper nails. Similarly, the zinc alloy sheets showed no corrosion from galvanized nails and only slight corrosion from bare steel nails.



UNDESIRABLE NAILING techniques result in deterioration around nail opening even in highly corrosion-resistant material

Among those familiar with corrosion theory, it is well known that when two dissimilar metals are in contact with each other, one or the other will generally tend to corrode if moisture is present. This is essentially an electrochemical phenomenon, and the relative positions of the two metals in the electrochemical series generally determines which of the two will corrode.

### Waterproof Washers Valuable

Sealing washers are commonly used under the nail heads when metal building sheets are nailed, and this is a highly desirable practice for several reasons. In addition to their waterproofing value, proper sealing washers reduce corrosion possibilities by keeping the nail out of contact with the sheet metal. With proper sealing washers, it therefore makes less difference what nails are used. Some washers may not continue to give a good seal, however, and in any event, electrical corrosion currents may flow over the surface of the washer when moisture is present. It therefore seems advisable, where maximum sheet-metal life is important, to use suitable washers in combination with nails that would not cause corrosion even in the absence of the washers. Such conservative practice will naturally have most value under severe weathering conditions.

Carbon-black-filled neoprene washers were found to weather better than ordinary neoprene washers in the NBS tests; the latter tended to harden. Lead sealing washers caused no appreciable corrosion of specimens exposed at Washington but did cause substantial corrosion of specimens exposed at Norfolk.

Additional exposure time will be required to establish the relative resistance of properly fastened sheets of the different metals to weathering under identical conditions. All the sheets investigated showed only very slight corrosion due to the atmosphere alone — at a distance from the nails — at the end of the two-year period.

## YOUR BUSINESS AND THE LAW

# Pitfalls in Buying Used Equipment

The ancient dictum of "Let the Buyer Beware" no longer holds in contracts where the seller has specifically implied that his merchandise is sound. In cases of used equipment, however, the buyer must still assume responsibility if goods prove to be unsatisfactory

A JEWELER OF SALT LAKE CITY, negotiating for the installation of air conditioning equipment, insisted that unless the unit was noiseless and adequate for cooling his store, he was not interested.

The contractor explained various systems, types and cost of equipment, assuring him there would be no more noise than from an electric fan. The contractor's offer to furnish and install the equipment he recommended, including electrical and other labor, was accepted.

The apparatus scattered water over the ceiling, spread dirt sucked in from an alley outside over the store, while the temperature remained substantially unchanged. An effort to remedy the defects ended in papers being blown from the desks and dust and dirt strewn over tables and watch repair benches.

#### Contractor Responsible for Installation Failure

The jeweler refused to pay for the equipment and the contractor sued for the money provided by his contract. The jeweler's defense was the failure of the contractor to perform his contract. In a decision in favor of the long-suffering jeweler, the court said that this contractor, knowing that the purchaser of the equipment relied on him for its satisfactory installation, was charged with the responsibility of furnishing an installation reasonably fit for the purpose intended.

This principle that is generally the law throughout the country is embodied in a Utah statute, "Where the buyer expressly or by implication makes known to the seller the particular purpose for which the goods are required and it appears that the buyer relies on the seller's skill or judgment, there is an implied warranty that the goods shall be reasonably fit for such purpose." This rule however relates to new and unused goods. It has little or no relation to the sale of second hand or used equipment.

### "Let the Buyer Beware" No Longer Valid

There is a legal rule that has come down to us from ancient Roman law, to the effect that the buyer must look out for himself. In these days when business transactions have a higher standard than those of a horse trade, this ancient rule has become more and more limited in its application.

In New York state a hundred and fifty years ago, suit was brought against a dealer for selling a well-nigh valueless product as one commanding a high price. Neither the seller nor the buyer knew when this product was sold that it was worthless.

The decision of that action in 1804 followed this ancient rule characterized by one writer as, "A very unconscientious maxim that has long prevailed, that it was the business of the buyer to be on his guard and that he must abide the loss of an imprudent purchase unless the goodness and soundness of the thing purchased be warranted by the seller."

Here the New York court said of the application of this rule, "If upon a sale there be neither a warranty nor fraud the purchaser purchases at his peril. This seems to have been the ancient and the uniform language of the English law. If there was no warranty and the seller sell the thing which he believes to be without fraud, he will not be liable for a latent or hidden defect."

A few years before this decision was made an English court had said of this same rule of law, "If a man sell me a horse with a secret malady without warranting it to be sound, he is not liable; that is, if there be no fraud. The instances are familiar in the case of horses. It is known that they have secret maladies which cannot be discovered by the usual trials and inspection of the horses. Therefore, the buyer requires a warranty of soundness in order to guard against such latent defects."

#### **Old Law Still Applies**

This old law has passed, and is completely invalid insofar as it applies to the sale of ordinary equipment. Such sales carry an implied warranty except where such assurance is expressly waived, that the articles purchased are reasonably fit for the purpose they are intended. Nevertheless in the buying and selling of used and second hand goods, this old rule of law, that the buyer must look out for himself, still controls.

The proprietor of a butcher shop in Chicago purchased second hand equipment to be installed in his place of business. In the suit brought to recover the price originally agreed upon, the Illinois court agreed with the dealer's contention that as the fixtures were second hand and selected by the buyer, and as there had been no fraud, this ancient law, "Let the buyer beware," entitled the dealer to a recovery of his claim.

Albert W. Gear, author of this article, has had twenty years experience as an attorney in the court of New York City. His has written widely on legal matters and is the author of The Family Legal Advices.

Another lawsuit involving the sale of second hand goods illustrates the survival of this old principle that in the sale of used goods there is no implied warranty by the dealer of their fitness for the purpose for which they are purchased. A woman in Colorado bought a second hand cream separator. A few days later when the separator was in operation, the bowl flew off the rapidly revolving shaft of the machine, hitting and seriously injuring the buyer.

The suit against the dealer for these injuries was decided against the woman and the dealer held free of responsibility, with the laconic comment of the court, "There is no implied warranty of second hand machinery."

However this ancient law of those conscienceless times of long ago when every business transaction was a horse trade, applies today only, so long as it is not set aside or bargained away by the terms of the sale contract, in second hand sales.

"If a person buys an article second hand there is no implied warranty," said the Supreme Court of the State of Washington in an action arising from the sale of used articles. "But there may be an express one. As in all other transactions it depends on the contract made by the parties themselves."

By this same rule, while there may be under the contract of sale, an express warranty of the fitness of second hand goods for the purpose for which they are bought, there may also be a waiver of this implied warranty of fitness in the purchase of new equipment.

#### Goods Sound, Unless Contract Otherwise States

Four air conditioning units were purchased under a Connecticut contract with the stipulation, "There is no agreement, verbal or otherwise, which is not set down herein," followed by a guarantee that the equipment and all parts were free from defective material or workmanship, with the undertaking of the seller if such defects should occur, limited to replacing any defective parts within one year from the date of installation.

In a suit brought by the dealer for the unpaid contract price the purchaser set up as a defense that the system failed to furnish adequate heat. The Connecticut court held that no responsibility could be imposed upon the dealer for such consequences in the face of this contract provision:

"The provision in the contract that 'There is no agreement, verbal or otherwise, which is not set down herein,' effectively excludes from consideration any such undertakings which are not stated in the contract."

The result of the present law that places on the dealer an implied warranty or guarantee to the buyer that air conditioning equipment is fit for the purpose for which it is purchased, is that there is included in sale and installation contracts, almost from necessity, provision that this liability be restricted to reasonable limits and not left to the exploitation of dissatisfied or unscrupulous buyers.

A contract for the installation of an air conditioning system was made by a resident of New Orleans with a local contractor, using equipment of a well known manufacturer. The contract in this transaction contained the clause:

"It is expressly understood that there are no verbal understandings pertaining to the above and that the company makes no guarantee or warranty whatever as to quality, fitness or performance except that the machinery and materials are well made, of good material in workmanlike manner and the company's entire liability in respect of any matter relating to or arising out of this order shall consist solely of and be completely discharged by replacement of parts found within one year from date of shipment to have been defectively manufactured."

Such a contract provision places the sale and installation of equipment in substantially the same category as second hand equipment except for the obligation for the replacement of defective parts.

Here the system failed to function properly and the purchaser in the suit to recover the price that had been already paid, contended that the system failed to reduce the average temperature to 80 F with an outside temperature of 95 F. The cause of the difficulty, however, was solely an inadequate water supply. In holding that the seller under these contract provisions was liable only for fulf-lling such warranties as were expressly set out in the agreement, the court said,

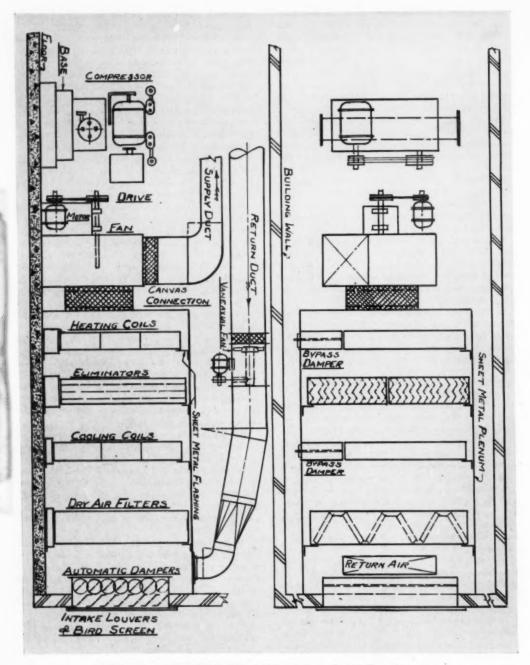
"True, the company warranted that the equipment was of sufficient size to accomplish the purpose for which it was sold but it did not warrant that it would produce the results contemplated if the user failed to supply the water pressure which was essential to adequate performance. Since the failure of the unit to perform to the extent guaranteed is not due to the size of the unit or because of mechanical vices contained therein, the company has performed its agreement as warranted and is not liable for a refund of the price paid."

The dealer selling second hand or used equipment is in essentially the same position as he is with contract provisions in the sale of new equipment exempting him from liability for implied warranties of fitness. The sale of second hand goods is still governed by that old law unchanged from the ancient, "Eye for an eye and tooth for a tooth," implying the absence of any right on the part of the purchaser to rely on the judgment or assurance of the seller.

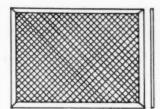
"By the common law," said a New York court in an old decision, "the seller is not bound to answer to the buyer for the quality or goodness of the articles sold unless he expressly warrants them to be sound and good or unless he, knowing them to be otherwise, hath used some art to disguise them or unless they turn out to be different from what he represents them to the buyer. In other words, there must be an express guarantee, or fraud, to make the seller answerable for the quality or goodness of the articles sold."

While today the more conscionable law governs the useful day-to-day transactions in new and unused equipment, this old law still applies in the sale of used or second hand goods.

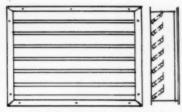
<sup>{</sup>Note: While this discussion applies to an actual case, it should be remembered that legal vales vary in different states.}



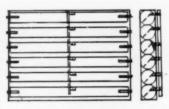
ELEVATION AND TOP VIEWS of air conditioning plenum chamber, illustrating equipment arrangement, outside air intake, return and supply duct connections and by pass dampers



INTAKE AIR SCREEN to prevent birds and trash from entering the conditioning systems



LOUVER INSTALLED behind the intake screen to provide protection from rain and snow



ADJUSTABLE VOLUME control dampers showing the manual adjustment lever in the side view

# **Fabricating Plenums for Air Conditioning**

Hugh B. Reid explains the use of sheet metal when making the layout for an air conditioning plenum chamber. Outside air intakes, filter racks, inspection doors and condensate pans are covered in detail

By READER REQUEST, typical roof type and wall type intakes for air conditioning systems are herein presented.

The drawing below shows the equipment layout for an air conditioning system with a wall type intake. The intake is the assembly of three parts: a bird screen, a louver, and a damper, as shown.

The bird screen is of half-inch mesh welded to a 11/2 in. by  $_{18}^{3}$  in, band iron frame. There should be 1/4 in, holes provided on the band iron frame for installing.

The air intake louver frame is made of 16 or 18 gauge galvanized iron with a necessary extension provided to insert the damper section. The louvers can be designed at any suitable angle, providing the back of one louver slightly overlaps the front of the one preceding. This will assure a maximum degree of protection against weather. The louvers should be riveted to the sides of the louver frame. The installer should allow a ½ in. to 1½ in. flange on the front to present a finished appearance. With this type of construction 22 gauge will be suitable.

The damper can be either automatically or manually controlled. The sections are connected by lugs to a light band iron with loose rivets for free opening and closing operation. The manual damper must be provided with a suitable quadrant for positioning the damper. There are two methods of damper construction:

(a) a short rod welded on each end of the damper, and (b) a continuous square rod fastened to the damper by lugs. If the (a) method is used, the damper sections

should be of 16 gauge or heavier. The (b) method will be practical for light gauge metal as the continuous bar stock will provide the necessary support for the damper.

#### **Roof Intake Construction**

The adjustment lever is required for the manual control damper only. When the damper is automatically regulated, the control is on the bar that ties the damper sections together.

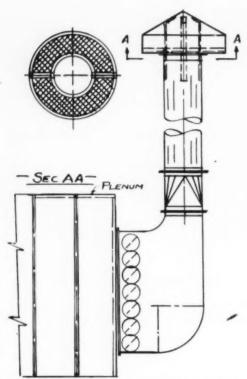
A roof intake consists of a stack with a weather cap and screen, as shown by the drawing. The free area of the screen should be equal to the area of the stack. A good rule to follow is to make the cap diameter two-andone-half times the diameter of the stack. The added area will compensate for the screen and angle rings.

The screen should be fabricated in two sections and bolted to the cap and stack angles. The intake velocity should not exceed 1,000 fpm.

The damper installation will be in the rectangular section at the entrance to the plenum.

The plenum construction is of straight panels with standing seam joints, with the joints on the inside of the plenum. It is recommended that a solid pan be placed under the equipment and that the panels be fastened to the pan. The condensate can be removed from the drip pan through a goose neck drain to the sewer.

The recommended method of arranging the equipment is a matter of standard practice. First a specific amount of fresh air must be drawn through a bird screen, weather louver, and control damper into the plenum.



ROOF INTAKE showing the sectional view of a weather cap and screen connected to the stack leading to the plenum chamber

#### Air Filter Selection

Next, the air must be cleaned of dust particles. To do this, air filters are installed. There are two methods of arranging banks of air filters: (a) the straight bank method, and (b) the zig zag method, as shown on the drawing. The straight bank type is preferable, the zig zag method being used when a greater area of cleaning surface is required. If the recommended velocity through the air filters is 250 fpm and the total air, supply is 25,000 cfm, the filter area in square feet is calculated by dividing the volume by the recommended velocity; thus 25,000 cfm divided by 250 fpm is equal to 100 sq ft of filter surface.

When summer and winter conditioning are included in the same installation, it is good practice to have the cooling coils ahead of the heating coils and to install a bank of eliminators between these units. The purpose of the eliminators is to get rid of excessive condensate from the cooled air before it passes to the heating coils.

By-pass dampers should be placed adjacent to the heating and cooling coils. These can be regulated in the off season to cut down the air restriction in the plenum.

All equipment ahead of the fan is enclosed in a sheet metal housing. Access inspection doors should be provided for servicing. The section from the cooling coils



PLENUM DOOR construction with recommendation for insulating



DRAIN PAN connected to prevent air leakage around the bottom of the plenum

to the fan, including the access doors, should be insulated. A good construction for an insulated door is as shown in the diagram.

Supply ducts should be insulated, so that the air will be delivered to the diffusers at the required temperature.

 The return duct must deliver the return air ahead of the air filters, as shown on the drawing.

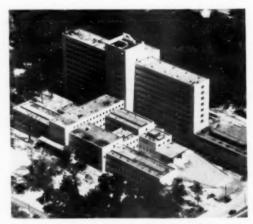
Most of the layout problems involved here have been presented

previously in articles in AMERICAN ARTISAN. Should any readers wish a review or have questions pertaining to pattern developments shown on the drawing, they will be answered as requested.

### **New Hospital Uses Tons of Sheet Metal**

The new Confederate Memorial Medical Center in Shreveport, Louisiana, is one of the most modern hospitals in the entire South. The main structure rises twelve floors above the street and is surrounded on three sides by service buildings. It is a state owned institution, and has a 750 bed capacity.

The climate being what it is in the deep South, it was imperative that the Medical Center should be completely air conditioned. The heating plant is fired by natural gas. All ducts and other sheet metal parts were fabricated from Ingot Iron Zincgrip sheets, of 20, 22, 24 and 26 gage, by Atlas Sheet Metal & Roofing Company, Bossier City, La. More than 87 tons of sheets were used for the job. Cooling is accomplished by a centrifugal refrigeration plant of 500 ton capacity.



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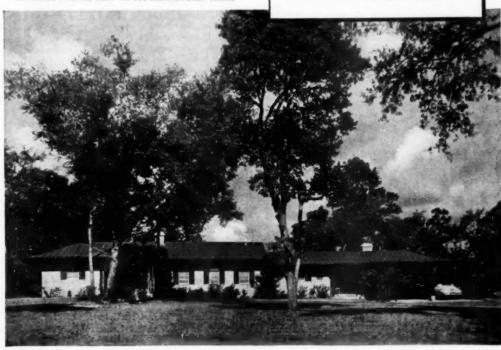
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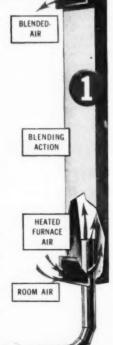
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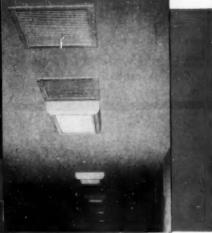
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Kalamazoo - a great name in heating -Yesterday, Today, and Tomorrow Kalamazoo – a great name in heating — Yesterday, Today, and Tomorrow announces

the BEST
DISTRIBUTOR
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in AMERICA!

WARM AIR CONDITIONER MEN! PHONE... WIRE...
WRITE NOW for details

of the Big Kalamazoo 6-Point Program.
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THE KALAMAZOO STOVE & FURNACE CO.,
Rochester Ave., Kalamazoo, Mich.,
Telephone: Kalamazoo 3-4601.



# SHEET METAL SCREW WITH SHEET METAL MEN





"Screws are something like people, If they lose their heads under pressure-if they turn out to be 'softies' -if they don't 'square up', they can slow up a job for sure. We avoid that by specifying Parker-Kalon."



"My dad put me wise to the difference in Sheet Metal Screws. He's used P-K Type A since he first started the business and never found anything to equal them."



"There's a 'best buy' in everything, and in Sheet Metal Screws we've found it's Parker-Kalon. Hardness and toughness is balanced just right, and threads are sharp and clean from head to gimlet pointin every screw. And that saves time . . . plenty!"

> **DELIVERIES ARE BETTER** SPECIFY P-K

## **GET YOUR COPY** OF THIS BOOKLET

Tells "where to use what" type of screw in all types of sheet metal, including stainless steel. Gives complete information on application. Ask your P-K Distributor for Form 480. Or, write Parker-Kalon Corporation, 200 Varick St., New York 14.



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The Original SELF-TAPPING SCREWS

AND OTHER FASTENING DEVICES



Types 111 (gos) - 211 (oil) Types 111 (gas) — 211 (eli) Gravity Furnace — Filis the bill for gravity installations, 90,000 Btu imput. Compact, Just 31½," high, 25½," wide, Shipped assembled with solid steel base. Provides quick, law cost installation. Type 211 available with Mueller's Atomized Sunburst Oil Barner. Convertible,

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Winter Air Conditioner — 90,000
or 110,000 Btv Input, Compact,
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Four Leaders... for every need

in today's building market

Mueller Climatrol 8

with "Designed Convertibility" ... for Oil, for Gas

Whatever you need for today's new house construction you name it - Mueller has it . . . gravity, forced air, highboys, and counterflows. Illustrated here are four new Leaders, each of which is designed, engineered and nationally accepted for new houses in all parts of the country.

Each of these units is available in oil or gas and is convertible — operating with equal efficiency on either fuel. The gas models are approved by A.G.A. The oil models are Underwriters' Laboratories, Inc. listed for close-tocombustible installation and are available with Mueller's Atomized Sunburst Oil Burner.

Don't overlook the "designed convertibility" of each. For "Oil today - Gas tomorrow" is a potent selling story which will help you get more business, especially if fuel is restricted in your area, This flexibility with fuels permits you to maintain lower inventories, but have complete coverage of your market needs,

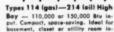
So — whatever you need in heating — remember it pays to follow the leaders. Write today for convincing information about these units and the complete line of Mueller Climatrol heating and air conditioning equipment. L. J. Mueller Furnace Co., 2030S W. Oklaboma Avenue, Milwaukee 15, Wisconsin.



Types 115 (gas) - 215 (oil) Counterflow — 110,000 or 150,-000 Btu input. Also 80,000 Btu input for gas. A natural for perimeter heating, for slab or crawl space homes. Shipped assembled and prewired. Typ: 215 available with Mueller's Atomized Sunburst Oil Burner. Convertible.



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lypes 114 (gas) — 214 (son) right Bay — 110,000 art 150,000 Btu in-put. Compact, space-saving. Ideal for basement, clears ar utility ream in-stallations in small howers. Shipped assembled. Type 214 available with Muslier's Atomized Sunburst Oil Burn-er. Convertible.

## **Known Everywhere for Superior Performance**



DEPENDABLE APPLIANCE MOTORS FOR THIRTY-SIX YEARS

More than 60 years of manufacturing home-heating equipment have proved the quality and dependability of

# Niagara For Every Home-Heating Requirement

## FOR HOMES WITHOUT A BASEMENT



Series 40 DFAC Downflow

trols through lower panel.

or bottom).

tion surface.

Series 40 AC

extraction surface.



Series 40 G



FOR HOMES WITH A BASEMENT

Series 50 AC



Exceptional flexibility! Blower-filter com Hi-Boy partment (shown at left of 40 AC) may be Downflow furnace, for perimeter heating systems, has installed on either side. Furnaces availfilter and blower at top. Access to burner and conable with or without burner-control cover. Deluxe models have 3-speed direct drive Hi-Boy furnace has blower and filter in lower section blower - standard, single-speed. Gravity model adapted to future addition of cabinet (filter may be installed on either side blower-filter unit, if desired. Niagara-made heat exchanger, heavy-gauge alloy steel Heat exchanger is Niagara-made, heavy-gauge alloy steel with corrugated walls for maximum heat-extracwith corrugated walls for maximum heat-

GAS-FIRED

Highly efficient cast-iron heat exchanger of Series 50 is Niagara-made, an exclusive development, long noted for economical operation and durability, featuring Niagara syphon counterflow system of heat extraction. Deluxe models have 3-speed directdrive blower and semi-automatic push-button lighter-standard models, single-speed blower. Five forced-air

units and four gravity type.

## OIL-FIRED



Series 30 AC



Series 40 VAC

Downflow



Model 30-90 DCFAC Model 30-90 DVAC Hi-Boy



Model 30-85 DG Gravity

### FOR HOMES WITH AND WITHOUT BASEMENTS

Niagara oil-fired furnaces, with pressure atomizing burners, are available in four types: Downflow (for perimeter heating systems), Hi-Boy, Gravity, and basement-type winter air conditioners (the latter in deluxe models with 3speed direct-drive blower; standard, with single-speed blower).

## COAL-FIRED

Niagara coal-fired furnaces are made in both round and square models. Included are winter air conditioners in attractive streamlined cabinets with integral blower-filter compartments. Coal furnace interiors feature Niagara-made one-piece cast-iron radiator, heavy-ribbed cast-iron feed sec-

Coal-Fired Winter Air Conditioner



Coal-Fired



Cool-Fired Gravity

tion, cast-iron firepot, extra heavy duplex grates with shaker handle attached. Square models are handsomely finished in green baked-on enomel.

High quality and dependable service make Niagara Furnaces a money-making and prestige-building line for heating contractors. Backed by 62 years' experience. Write for complete information.

NIAGARA FURNACE DIVISION

THE FOREST CITY FOUNDRIES COMPANY 2500 West 27th St. . Cleveland 13, Ohio

NIAGARA is the word for MAXIMUM HEAT at MINIMUM COST



it costs no more to

# give your customers this extra quality





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Quality Standard

The transfer is a competitively priced with a continuery cools controls. Compete quality and for the Windows or has in a same quality and and the look at all there were quality formatted the look at all there were quality formatted.

To cush in on this first real improvement in draft controls in 20 years, send far literature and details today, Sold exclusively through leading jobbers and manufacturers.

Windmaster

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Dopt. A





Get those larger profits with large capacity Conditionairs

DA Oil Conditionairs—Here is the most outstanding line of oil-fired Conditionairs on the market today. This series is available in 5 models with capacities from 85,000 to 200,000 Btu per hour output. The DA models feature the Rotopower Unix which combines all moving parts of the burner in a single, compact, sealed unit which can be easily removed for inspection or adjustment. Heavy gauge furniture steel cabinets are beautifully finished in Delco-Green baked ename!



More and more alert installers of warm air heating equipment have discovered a fertile and highly profitable market for large capacity Delco-Heat Conditionairs in large size homes, whether new or being modernized. You can, too, with Delco-Heat.

Delco Appliance makes a complete line of excep-

GA Gas Conditionair – Delco-Hear distributors are ahead of all competition with this line of de luxe gas-fired Conditionairs. The GA Series includes 5 forced warm air models with capacities from 62,500 to 210,000 Btu input. Outstanding selling features include 12-gauge Multi-Rad heat exchanger, double ribbon type burner, built-in draft diverter, Delco Appliance Rigidframe Motor and rubber-mounted blower and motor.



Delco Appliance makes a complete line of exceptionally fine, large size forced warm air furnaces for oil or gas fuels. DA oil-fired Conditionairs are available in capacities up to 200,000 Btu per hour output and the GA Series of Conditionairs are available in a wide range of capacities up to 210,000 Btu per hour input.

The high quality of all Delco-Heat equipment, its flexibility of installation, Delco's reputation for dependable service plus low competitive prices give every Delco-Heat distributor a strong selling basis to build a more profitable business, and especially with the large capacity units. For complete information about the money-making possibilities of a Delco-Heat franchise, send coupon below.

Delco-Heat manufactures a complete line of oil and gas-fired beating equipment for any type heating system, any modernization job

# For a good deal DEAL WITH DELCO







Oil-Fired



Conversion Oil Burners



Domestic Water Systems



Oil-Fire

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Street \_\_\_\_\_ Zone State



# You profit TWICE when you hitch this Automatic Control to every space heater sale

## What brand do you sell?

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OIL/Canada)
FESS(Canada)
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GILLEN
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# Your customers won't be without Automatic Control . . . once you show them!

Here's the way to pocket an extra profit on the sale of every oil burning space heater. Your customers want the comfort and convenience of thermostatically controlled heat. They want its fuel-saving economy. They can have these benefits inexpensively if you'll sell this compact accessory with every heater.

The A-P- Comfort Control is designed especially for use on any space heater on the list at left. It's easily installed, and as inexpensive as a subscription to your customer's favorite newspaper. Show it, demonstrate it — and you'll sell it.

## Easy to install

Anyone can install the A-P Comfort Control. Takes only a few minutes. No complex wiring. Kit furnished complete. Choice of electric or mechanical type—for popular makes of oil-fired space heaters.



#### A-P CONTROLS CORPORATION

(formerly Automatic Products Company)

2452 N. 32nd Street . Milwaukee 45, Wis. . In Canada: A-P Controls Corporation Ltd., Cooksville, Ont.

"Never spent so little for heating since I put in a Winkler LP\*,"



"What an oil

# OF WINKLER *LP* ARE PRE-SOLD THROUGH OWNERS' RECOMMENDATIONS

# GOOD NEWS TRAVELS FAST!

A recent survey proves that Winkler dealers profit from a huge force of unpaid salesmen! These are owners so delighted with Winkler LP Burner performance that they urge friends to buy.

That's why the Winkler franchise is like a rolling snowball-producing increasing profits, year after year. It is a growing asset.

This owner enthusiasm for Winkler Products is not surprising . . . because Winkler makes quality heating equipment. The development and production of this equipment is not secondary to some other phase of the company's business. Heating equipment is our lifeline, not a sideline!

Remember, too, that the Winkler line of furnaces, boilers, stokers, oil and gas burners is now so comprehensive that virtually every type of buyer is a prospect.

Write today for information on how to obtain the Winkler franchise.





The Winkler Training Institute is open to all Winkler dealers and their personnel. Here in the Sales and Engineering Schools, Winkler trainees hear . . . see . . . and actually do the things which assure successful selling and correct application of Winkler Automatic Heating Equipment.

# NKLE

AUTOMATIC HEATING EQUIPMENT U. S. MACHINE CORPORATION . Bept. A-82, Lebanon, Ind.





## MONCRIEF SUREFIT FITTINGS

FOR SMALL PIPE, PERIMETER—EXTENDED PLENUM INSTALLATIONS

Quicker to Assemble - Easier to Handle - Quicker to Install

See your Moncrief jobber for catalogs with descriptions and specifications on the complete Moncrief line of heating equipment for GAS...OIL....COAL. Also get your copy of the NEW Pipe and Fittings Catalog No. 57 for a complete listing of Moncrief Snap Lock Warm Air Round Pipe...Snap Lock Duct and 4" Pipe and Fittings for Small Diameter Perimeter Warm Air installations.

ASK ABOUT SNAP LOCK PIPE



No. 506-R Radial Tee

No. 506-B Branch Tee



No. PH2 Register Tee

THE HENRY FURNACE COMPANY . Medina, Ohio

HEATING AND AIR CONDITIONING UNITS



FURNACE PIPE AND FITTINGS

HEATING & COOLI ERIMETER







KEEPS BIDS LOW Here's the NEWEST MOST REVOLUTIONARY ADVANCE IN AIR DIFFUSER INSTALLATION. There is simply no comparison between TITUS PERIMETER DIFFUSERS and ordinary registers. TITUS DIFFUSERS install so quickly, so easily, and with such drastic cuts in labor and material you cannot afford to use old styles. These diffusers require about \( \frac{1}{2} \) the duct work, and much less than \( \frac{1}{2} \) the place in the property of the p Once your men install TITUS PERIMETER DIFFUSERS, cost comparisons will positively prove these amazing labor and product economies

**ELIMINATES OLD SLOW INSTALLATION METHODS** No roughing-in necessary. Diffuser slips easily onto boot. There is no cutting into wall or plaster.

CAN BE INSTALLED WITH EQUAL EASE IN OLD OR NEW BUILDINGS

#### AMAZING COOLING AND HEATING EFFICIENCY.

Diffuser directs blanket of air over both entire wall and into room proper.

Makes tremendous fuel savings possible . . . House more comfortable . . . more healthful to live in . . . better for the children. Stops outer wall chill.

CONTROLS AIR LONGER . . . WITH 180° DIFFUSION OF AIR STREAM!

Four baffles direct air stream over entire outside wall, from floor to ceiling. Also directs air into room. Eliminates floor drafts and "Cold Film" on outside walls.

#### ULTRA MODERN FINISH

Titus Diffusers are made with a beauty that blends with the room. Furnianed with finish coat. No additional expensive painting required. Made of beavy duty 20 gauge steel to withstand floor level abuse.

### GUARANTEED QUALITY

Attractive Appearance . . . competitively priced TITUS DIFFUSERS meet and beat competition, price wise—beauty wise, product wise. Regardless of the type of register installations you are now doing, you'll want to place a trial order for this amazing new diffuser for comparison purpos

#### IMPORTANT

Ask about Titus' new Package Plan with complete diffuser set up for 4-5-6- or 7-room houses.

FREE LITERATURE . . . WRITE TODAY 

#### TITUS INCORPORATED . WATERLOO, IOWA

Gentlemen: Rush me complete information on this amazing new

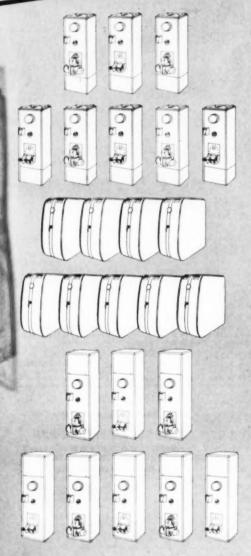
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-- these two pages can be the most important of your business life...



# MOR-SUN presents a NEW CONCEPT of MERCHANDISING in the Home Heating Industry

A Think what it would mean to you if \_

You could supply your customer with a selection like this —

With an inventory no greater than this -

four Toaster, three General Purpose, three Reverse Flow models . . . 'TEN—count 'em—ten . . . and each one designed for quick conversion and efficient combustion of either gas or oil!





MOR-SUN Furnace Division

# The Sensational Profit-Making

# MOR-SUN



# CONTROLLED INVENTORY PROGRAM

MOR-SUN is proud to present this CONTROLLED INVENTORY PROGRAM . . . because it can mean greater profits for you!

Simply stated, it offers you a complete line of furnaces in just a few basic units!

### Here's how it works:

You order a small stock of MOR-SUN basic furnaces, plus an equal number of assembled packaged burners you think you will require - gas, oil or LPG. If you guess wrong - think nothing of it; you can exchange any burner package with us !

That means that the MOR-SUN Controlled Inventory Program gives you:

- A smaller investment in stock.
- Ouicker delivery to your customers.
- Furnace installed without burner and controls can't be pilferaged in new construction.
- · No worry about uncertainty of fuels.
- · Guarantee to the customer of inexpensive future changeover without loss of efficiency.
- NO DEAD INVENTORY.

Only TEN . . . that's the exact number of furnaces you stock to have a complete inventory of the New MOR-SUN LINE!

They range in bonnet output capacities from 52,000 btu. to 152,000 btu. They can be fired with natural, mixed, manufactured or liquefied petroleum gas - or with petroleum fuel oil.

The MOR-SUN line is completely re-engineered thoroughly field-tested to operate efficiently and economically with either gas or oil.

They are not "jacks-of-all-trades", compromising with one fuel to accommodate another. They operate at maximum efficiency with each fuel!

MOR-SUN Furnaces are approved by the American Gas Association and are listed by Underwriters' Laboratories and Canadian Standards Association.

Complete burner assemblies, ready for quick, easy installation, are shipped in separate packages.

Should your inventory become unbalanced with gas or oil burners, you merely adjust it by exchanging burner packages. You can control your inventory.

No indecision in ordering, no pilferage on new home construction, no dead inventory! The basic MOR-SUN furnace is installed now—the burner later, when the fuel decision is made.

The famous MOR-SUN single port ventura gas burner, designed specifically for MOR-SUN Furnaces and so widely adopted by the industry, and now better than

For oil, after years of engineering research and development we present our exclusive new oil burner design the MOR-SUN OIL BURNER!

All this, plus MOR-SUN national advertising and promotion, will make you proud to be a MOR-SUN MERCHANDISER. Yes, THERE IS SOMETHING NEW UNDER THE MOR-SUN!

To know how profitable all this can be to you . . .

### MAIL THIS COUPON NOW ...

and "Sunny" will see that you get the story immediately.

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625 AMHERST ST.

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**Saving you money** on your regular job-to-job steel requirements by helping you place your orders to get the best price.

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TULSA - YOUNGSTOWN

### UNITED STATES STEEL



Mr. Albert's first experience with the "Kno-Draft Method" was a year ago in a Danbury, Connecticut, residence. "It was enlightening and altogether satisfactory," he says, "and after observing the first year's operation, I am convinced it has much to offer."

From the contractor's standpoint, Mr. Albert was most impressed by the simplicity and low cost installation. Kno-Draft Ceiling Air Diffusers are sized by the 'inches of heat' method, and prefabricated round ducts and elbows can be used for the attic runouts. There is never any question where to locate the diffusers—always centered in the aver-

<u>ceiling</u> air diffusers

age room, and on quarter-centers in large oblong spaces, such as living rooms.

From the user's standpoint, Kno-Draft Ceiling Air Diffusers offer even heat distribution (no more than 3° difference throughout the area!), exceptionally clean operation, complete freedom from drafts, and many other features.

For complete details on the Danbury residence mentioned above, as written by John J. Albert, the contractor . . . and for full details about the "Kno-Draft Method" of residential forced warm air heating . . . mail the coupon today.



W. B. CONNOR ENGINEERING CORP.
Dept. 1-82, Danbury, Connecticut
Please send me full details about the "Kno-Draft Method" of residential forced warm air heating.
Name
Position
Company
Street

"These Prominent Heating Wholesalers in my territory are sure sold on iking BLOWER PACKAGES."

Says genial TOM McINTYRE, Viking representative in Central Ohio and Western Pennsylvania





"I don't have any warehouse problem at all with the Blower Packages Viking makes. Steady turn-over keeps valuable space from being tied up. This low overhead means bigger profits, and you know we like that."

RAY DAILEY, Manufacturers Supply Co., 14 Kenmore Ave., Youngstown, Ohio



"From my standpoint Viking's Blower Packages just can't be beat. My dealers save up to 45 minutes installation time because of the special engineering features built into Viking Blowers."

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"Viking's quality and top notch design have helped get rid of slack seasons. When your dealers tell you Viking Blowers are the best there ever handled, you know you've scored a real profit hit



Pennsylvania

"We have a high regard for Viking Blowers and Fans because both we and our dealers have found that Viking products and the people who make them are completely retiable."

Louis F. Demmler, President, Demmler Bros. Company, 100 Ross St., Pittsburgh 19, Pa.











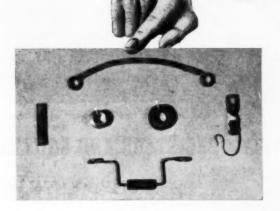




102

Why <u>bother</u> with all these heaters?

just a twist of the wrist adjusts Magic Dial nermostat!



The exclusive Perfex adjustable heater, built right into the Perfex "Magic Dial" thermostat, offers you a complete range of heater adjustments to mate any primary control . . . coal, gas or oil.

One simple adjustment and this Perfex thermostat is set for the job! . . . It's as simple as that. Only one model to stock! No assortment of heaters or thermostats to carry.

Perfex is always first with service features for you . . . and with comfort features for your customers.



PERFEX CORPORATION, MILWAUKEE, WISCONSIN

CONTROLS YOU CAN TRUST In Canada, Perfex Centrels, Ltd., Guelph, Torento 1 Automatic Heating Controls . Industrial Instruments . Industrial Engine Radiators . Calor Process Printing PERFEX CORPORATION Send for this FREE Controls Division 500 W. Oklahoma Ave., Milwaukee 7, Wisconsin I'd like a copy of the new Adjustable Heater card. Also include a copy of the new Perfex Condensed catalog. 



# No. 256

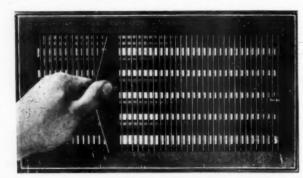
# That Outstanding Leader

## of AIR CONDITIONING REGISTERS

### The No. 256 A-C REGISTER

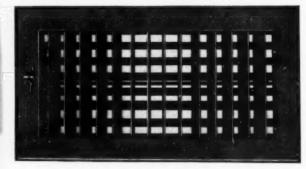
Multiple Valve - Lever Operated. VERTICAL-BAR. Bendable for Setting. Wide Margins provide room for Gasket Material and Complete Coverage for plaster.

Use with any Stackhead. Any Lateral Diffusion, and any Upflow or Downflow.



IMMEDIATE SHIPMENT of No. 256's and all Standard A-C and GRAVITY LINES. Do not accept Inferior Substitutes when the BEST "U.S." LINES are promptly Available.

## No. 190 Series U.S. MULTI-FLEX REGISTERS AND GR



EASIEST of ALL to Operate. GRILLE-BARS are Rolled-FORMED. Fully STREAMLINED and Individually Adjusted.

Made in every Style for any specific function and in All Required Sizes.

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THE No. 190 SERIES EXCELS all other makes. Order and Decide for Yourself. Get our No. 51 Catalog. No. 53 Catalog available in 60

- BE SURE - Ask for Our New Bulletin on No. 410 Diffuser Floor Registers - No. 133-3/4 Perimeter Base Registers - No. 132-1/4 Base Small Pipe Register - No. 163-3/4 Out of Wall Base Register.

> Our New No. 53 General Catalog — ready for distribution in very near future.



No. 410 Diffuser Floor Registers are new coming off U.S. production lines for immediate shipment.



COAST FROM SOLD

IT'S A REALLY NEW GRAVITY FURNACE!

It Has Completely Enclosed Controls!

It's a Rheem

Now, with completely enclosed controls, with no unsightly exterior fittings, the new Rheem Gravity Furnace tops the field in smart styling and compact, streamlined beauty!

Shipped fully assembled and wired, the Rheem Gravity Furnace is the latest in modern design—opening the door to greater sales opportunities for you!

#### THREE SIZES and CAPACITIES

Model per Hour Width Height Depth 3302-77 77,000 30" 50%" 27%" 3302-95 95,000 35%" 50%" 27%" 3302-112 112,000 41" 50%" 27%"



Rheen Conty To

# THESE FEATURES

Enclosed Piping and Controls— Permit smart, streamlined design a handsome, compact over-all unit.

Exclusive Flame-Shaped Combustion Chember—Eliminates the "hot spots" that weaken and break down metal ... assures long fursion and contraction noises.

Attractive Enamel Finish — Provides attractive, durable appearance — baked-on polychromatic grey enamel gives furnace a rugged automobile-type finish.

Automotic Controls — Provide care-free, safe operation. Controls start and stop furnace automatically, safely. Pressure regulator maintains uniform gas feed.

Inside Insulators — Prevent hot jacket. Insulation on inside of outer case keeps air flow in closer contact with the heating surfaces.

Sloped Burner — For quieter operation. The "pop" often heard when a gas flame is extinguished is minimized. Furnace shuts off quietly.

Easily Accessible Clean-Out Ducts—Offer easier cleaning. Ducts readily accessible, make dust, soot accumulations easily removable.



Beam Gas Furnace

Rheem

#### RHEEM MANUFACTURING COMPANY

General Sales Offices, Dept. 82 570 Lexington Ave., New York 22, N. Y.

Gentlemen:
I'm interested in hearing more about the new Rheem
Gravity Furnace and the complete Rheem line.

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A Century fractional horsepower motor on an overhead blawer in a National Guard Armory used to exhaust air from the firing line of rifle range.

# WHY Century MOTORIZED EQUIPMENT KEEPS YOUR CUSTOMERS SATISFIED...

The motor specifications — where skillfully selected — to assure the TOP PERFORMANCE and DEPENDABLE QUIET SERVICE that is built into each class of equipment.

Refrigeration compressors require one combination of operating characteristics and specifications—fans and blowers another combination—various types of heating equipment still another.

In over 50 years, Century has developed a wide line of types of motors with literally hundreds of specifications to choose from. It is easy to ENGINEER YOUR PRODUCT PERFORMANCE—THROUGH SKILLFUL MOTOR APPLICATION.

If you have motor service problems, phone or write to any of Century's 28 District offices regarding Century's national network of service stations—the motor exchange plan will serve you whether your motors are in or out of warranty.

Specify Century Motorized Equipment—get top equipment performance—dependable quiet service—keep your customers satisfied.



Century tractional horsepower motor used on an overhead blower in the same Armory to exhaust air from a ticket office and men's wash room.



Century 1/2 horsepower capacitor motor on a furnace blower.



1/6 horsepower Century motor on a ventilating fan.

## CENTURY ELECTRIC CO

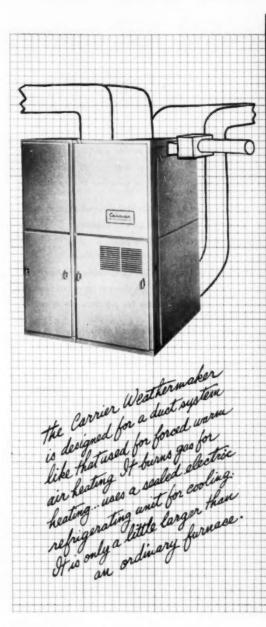
1806 Pine Street

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Contains Contains

# This belongs in your plans

It's the new Carrier Weathermaker\* Air Conditioner...
the heart of the Carrier Weathermaker Home. We're putting it in the plans of home buyers and architects...it belongs in *your* plans, too.



### It belongs in your plans because

there's a tremendous market waiting for it. Air conditioning is moving fast into the residential field. Home buyers everywhere are real prospects for a simple, compact unit that will heat and cool, give them year-round comfort. These prospects work in air conditioned offices and plants, shop in air conditioned stores...today they want to live in air conditioned homes.

### It belongs in your plans because

the new Carrier Weathermaker is the only unit that completely fills the bill. At a flick of its switch it heats in the winter, coo's in the summer, circulates clean fresh air all year round. It's a single handsome package that fits almost anywhere—in the attic, in the basement, in a utility room, even in a closet.

## It belongs in your plans because

it's being pushed—hard—with a campaign that's designed to move the Weathermaker — and the dealers who sell it — right out of the same class with competition. All over the country people are hearing about the Weathermaker Home . . . a better-designed, less-expensive home . . . a cleaner, quieter, more comfortable home . . . a home they can have only with the Carrier Weathermaker Air Conditioner you sell!

Why not write today for the full profit story?

\*Reg. U.S. Pol. OR.



AIR CONDITIONING • REFRIGERATION For 5() years—the people who know air conditioning best

CARRIER CORPORATION

308 S. Geddes Street, Syracuse, New York

Please send me the profit story on the Weathermaker Air Conditioner and the Weathermaker Home.

Name

Street

City\_

State\_\_\_



INVESTIGATE
PENN'S COMPLETE
LINE OF HEATING

CONTROLS

catalog

Send for FREE

# only PENN gives you all these great features in WARM AIR controls

DON'T SETTLE FOR ANYTHING LESS!

- Faster response to temperature changes.
- Greater accuracy over entire operating range.
- Easier to install . . . generous wiring space.
- Can be mounted in close quarters in any position or at any angle.
- Small, compact, light in weight, yet sturdy.
- Sensitive, liquid-filled power element.
- Self-compensated diaphragm.
- Compact, snap-acting contact structure.
- Dust-proof, tamper-proof switching mechanism.
- Silver contacts with high current carrying capacity.
- Heavy contact pressure for positive electrical performance.
- Simple "sight-set"calibrated dial.
- Once set, differential remains constant.
- "Summer Fan On" position on dial.
- Plus other profit features to assure long-life dependability to keep your heating customers sold on you!

Penn Expor

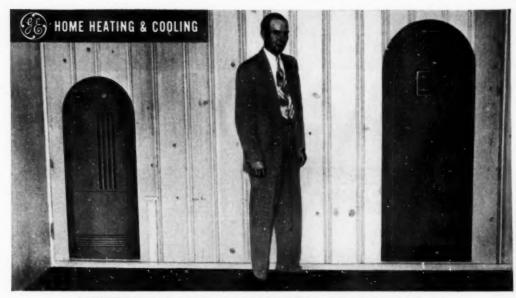
Penn Controls, Inc., Goshen, Indiana Export Division: 13 E. 40th Street, New York 16, N.Y., U.S.A. In Canada: Penn Controls Limited, Toronto, Ontario

NATIONALLY ADVERTISED IN BETTER HOMES & GARDENS, AMERICAN HOME, NEWSWEEK

PENN

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES



AN EXAMPLE of General Electric leadership with the G-E Air-Wall' System for both Heating and Cooling, this home in Oakley, Kansas, offers a new concept of all-season comfort. G-E Dealer Bueschhoff shows his installation of attractive G-E Gas Furnace (left) and G-E Home Air Conditioner (right) in accovers off the recreation room.

# "A tremendous future for dealers in G-E AND MONDES heating and cooling"

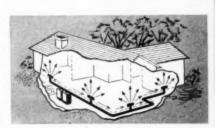
-Dave Rueschhoff, Dave's Metal Shop, G-E Home Heating & Cooling Dealer, Oakley, Kansas

"We are right on the threshold of a rapid expansion of our market. New fields for warm air heating dealers have been opened wide by General Electric's low-cost year 'round air conditioning and unique Air-Wall System. I am going to get my share of the business!"

# A G-E LEADERSHIP FRANCHISE PUTS YOU AHEAD

- IN PRODUCTS: Unique G-E Air-Wall System; G-E packaged home cooling; G-E "quick-comfort" fuel-thrifty gas and oil furnaces—outstanding quality at a fair price.
- IN CONSUMER PREFERENCE: Surveys prove the "General Electric" name enjoys tremendous public acceptance.
- IN ADVERTISING: Powerful national advertising aimed at consumers and builders, and timely action-packed sales programs.
- IN ORGANIZATION: Experienced engineering, sales and service assistance, and continuous up-to-date training programs.
- A G-E Leadership Franchise is a lasting business asset. Write us today—there may be an opening in your area.





G-E AIR-WALL System is ideal for both heating and cooling. The register, usually installed near the floor on outer walls, sends a fan-like pattern of warm or cool air up and over these surfaces, counteracting the effect of outdoor temperatures.

-	
	General Electric Company, Section GH-8 Air Conditioning Division, Bloomfield, New Jersey
	Please tell me more about my business opportunities with a G-E Leadership Franchise.
	Name
	Compeny
	Address
	City

FOR LASTING JOBS ...

# COP-R-LOY

THE COPPER ALLOYED STEEL

COPPER ALLOYED STEEL SHEETS

For their finest jobs, through galvanized sheets have looked to Wheeling. That's because Wheeling galvanized sheets are doubly protected for longer life. First, by Wheeling's Cop-R-Loy formula in the base metal. Second, by Wheeling's galvanizing. These two Wheeling features team up to give your customers lasting jobs.



# WHEELING CORRUGATING COMPANY

WHEELING, WEST VIRGINIA

ATLANTA BOSTON BUFFALO CHICAGO COLUMBUS DETROIT
RANSAS CITY LOUISVILLE MINNEAPOLIS NEW ORLEANS
NEW YORK PHILADELPHIA RICHMOND ST. LOUIS



starting in September





AIR FILTERS

present

# GODFREY

coast to coast on CBS television and radio

You can sell more fillers if your
tio-in locally with America's
top salesman in the higgest
remotion in DUST-STOP July a story



# Plan your ARTHUR

# store displays



REPLACE DIRT-CLOGGED FURNACE FILTERS NOW!

> **Arthur Godfrey says:** W with TUST CO. HORSE

LL THRIFTY

# PROMOTION MATERIAL ORDER FORM

Contiercon	: Please send me the fallowing	Nome	
QUANTITY.	THE RESERVE	QUANTITY.	Frint
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	-7 Filter size cotalog		D52-23 Window poster
	-13 De lune display		D\$2-24 Counter cord
	-14 Booklet, "How to get Mero"	-	D62 25 Neuropeper ad mot
	-20 Utility enrolope		D32-26 Recil - apot ennouncement

	PERSE PRE			
		- Toma		

# How to get year

# GODFREY tie-in now!

# customer reminders







Arthur Godfrey says: dirt-clogged





'It's time to change those dirt-clagged furnace filters" -Arthur Godfrey For a cleaner, warmer how replace those dirtfurnace filters





# Your DUSTOP market

# has grown again!

Year index opportunities with DUST-STOP Pibers nove get amilion—they aim only gover larger. Every forced works-six furnises installed to at potential startest for an average of 2 filters per year flowed on two changes?

In the purp year, more than held the new famous built were equipped with forced warm-ofhout, find many older heating systems wermentanined with filter-continued units

To get your chans of this serving histories, stock A display and provide DUST-STOP Filters in your mathematical The Institute to those . . . Godfray will help you get if . . . , so the se meloy

546,030 1,346,056

4,500,500

Number of forced warm-air forances in use

The market this Job in 81/2 times as big as in 1940-0 times as his as in 1945

# Here's why it pays to sell and promote FIBERGEAS LOGISTOP filters

# Best Filter...

The design of the DUST-STOP Filter, and the special neadrying adhesive used, give it high efficiency ,...high dis-looking aspectry. It does not clog quickly from "less-loading".

# Best Known...

Years of one, and years of apprentive advertising and promotion minto DUST-STUP Air Philors for outsimiling fevorite—with the festival tensors of any product in the field.

# Standard Equipment . .

SUST-STOP Air Filiese are immulaceurer's standard againment in meet forced warm air turnaceu

# Aggressively Promoted ...

Strong, consistent advertising, year other year heaps saling DUST-SYOP Filters for you

Check your filter stack teday and order an adequate supply!

"FIRMULAS and DUST STOP are trade-marks (Reg. U.S. Pat. Of | of Owen Corning Ribergias Corporaities for products made of ar with there of plant.

Little In U.S.A



"CHRYSLER BUILDING EAST"
Architect:
Reinhard, Hofmeister & Walquist.
General Contractor:
Turner Construction Co.
Sheer Metal Contractor:
Benjamin Riesner, Inc.



# FOR THE LATEST AND FINEST TECHNIQUE

# in Copper Base Flashing

# Install The New Chase Copper Base Flashing Expansion Joint

This new patented Copper Joint permits movement of copper base flashings due to expansion and contraction without danger of buckling or cracking.

Sheet metal contractors and architects realize that with this Chase Expansion Joint, copper base flashing becomes even more efficient and economical for use at the juncture of flat built-up roof and masonry wall.

The new Chase Copper Base Flashing Expansion Joint is made of 18-ounce copper. Open seams on the edges of the joint permit fast, easy interlocking and soldering to the adjoining lengths of base flashing. A "cap box" is supplied with each Expansion Joint for attachment to the cap flashing and a completely watertight job.



WATERBURY 20, CONNECTICUT . SURSIBLARY OF KENNECOTT COPPER CORPORATION

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iorgh San Francisco lence Seattle storf Millimbury 908 (Ysales office



FREE FOLDERS: You will also want to know about the new Chase Onepiece Thru-Wall Copper Flashing and Cap Flashing Receiver. Write for folders on both these new developments in copper flashing.

Chase Bross & Copp Waterbury 20, Conr	ser Co., Dept. AA 852
Please send me yo	our free folders
	e Flashing Expansion Joint. ne-Piece Then-Wall Copper Flashing
NAME	
POSITION	
POSITION	



# "Roofing Renaissance" Keynote of Georgia Convention

Every roof should be pointed to as the work of the contractor and should so be labeled in all sales reference instead of the current practice of calling a roof by its trade name. The roof is not a product of a manufacturer but the result of work performed by the contractor, his employees and with the aid of other products. A roof should be known as the Green Valley Sheet Metal Company's roof and this expression be used as the lead line in all reference to the job. Too much emphasis has been put on nationally known products and not near enough on local achievement. Carroll Figge, Chicago, used this as his theme when he addressed the members of the Roofing and Sheet Metal Contractors Association of Georgia attending their Annual Convention at Wilmington Island, near Sayannah.

The registration was fifty per cent greater than at any previous convention, with the ladies more in evidence than at any other time. Among the many subjects covered during the four day meeting were Apprenticeship Training, Sheet Metal Contracting, Tools, Insulation, and Public Relations, all of which will be reported on in detail in the next issue of AMERICAN ARTISAN.

The social activities included a river cruise at which the "Hokey Pokey round dance" was something not to forget. The annual banquet provided a repast to delight the most critical palate and was highlighted by after dinner dancing and floor show.

## Reciprocal License Ordinance Explained at Detroit

The Detroit Warm Air Heating Association and the Detroit Stoker Dealers Association have provided meeting rooms to explain to their members how and where the Reciprocal License Ordinance and Code works in the Detroit Metropolitan Area. One of the aims of the Detroit group is to be a benefit to the industry and the public, and they believe that the more members they have, the more effective will be their achievement.

At the July meeting, the Detroit Furnace and Stove Repair Co. (George Grewe and Associates) were the hosts of the evening, and the refreshments were enjoyed by all. The subject of the meeting was "Humidification" with all its importance to owners and occupants of any type of building covered. George and Al Greulich pointed out that proper humidification contributes not only to the health and comfort of building occupants but to the well being of the premises.

# Detailed Explanation of Perimeter Heating Given to Indiana Association

The advantages of perimeter heating as a medium for the distribution of warm air at the point of the greatest heat loss were outlined by H. G. Hays, chief engineer, Armstrong Furnace Co., in his speech before the members of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana, at their mid-year district meeting in Terre Haute. Hays emphasized the importance of correctly sizing the supply ducts and giving all attention to the lay out plan. He also cautioned against trying to apply a set rule to all applications, stating that each job should be engineered to meet the needs of that particular application.

The mid-year district meeting was sponsored by The Braden Mfg. Co., Terre Haute. James Beard and William Balfe received the compliments of the entire membership for the fine program conducted. Every one agreed that they enjoyed entertainment provided by the LaMaster Trio which presented a number of beautiful selections from the old favorites.

Plans were made for holding the 1953 Purdue Warm Air Heating Short course. T. B. Speaker will provide the supervision and scheduling. The next district meeting will be held at South Bend, October 24, with James R. Walker, 311 S. Chapin St., South Bend, as chairman of arrangements, C. O. Stauffer and Earl Troeger are co-chairmen and they will be kept busy during the meeting, especially with the football game between DePauw and North Carolina scheduled for October 25.

The Terre Haute meeting has topped all former records both for attendance and in the number of applications for membership.

The Anderson Heating and Sheet Metal Association recently elected temporary officers to serve until their constitution and by laws have been passed by the membership and permanent steps can be taken to establish this new organization. The officers are John Harbison, president; Walter Baker, vice president and Ruppert Ritter, secretary-treasurer. Every good wish is extended to this active and forward-looking group.

### **Canadians Send in Written Examinations**

A total of 177 test papers on heating problems have been sent to the Canadian Chapter of the National Warm Air Heating and Air Conditioning Association office in Toronto. There were 593 delegates who attended the twelve schools held throughout Canada during the past heating season. Many of these delegates are expected to send their papers in at a later date for evaluation. Many of the papers received have already been graded and returned but due to the slow job of carefully considering each answer and making any appropriate comment it will take quite a while to complete the project and make the results public.

The marking of the test papers will follow the plan outlined at each of the various schools and will be quite strict. Since a minimum grade of 80 percent is required as a passing mark on each of the four sections of the test, this sets a fairly high standard. The results of this policy make it difficult for a large number to qualify for the Canadian Chapter certificate. In order to make sure that the marking of the papers is being done on a fair and equitable basis, several papers have been graded by the Chapter's Technical Advisory Committee. The results of this check indicate to the committee that the marking process used is quite accurate.

It may be of interest to note that the Chapter's technical director finds more failures on the section of the test dealing with gravity warm air heating design than in any other section of the test. It is recommended that a more careful study be made of Manual No. 3 on heat loss calculations, particularly as far as the principles of infiltration are concerned. Also a review of Manual No. 5 on gravity design would be indicated as worthwhile from the results of failure to answer the specific questions adequately on that subject.

Those who receive marks indicating that they have not qualified for the Chapter's certificate are urged to make a concentrated study of the manuals. There are many delegates who have found it necessary to attend several of the schools before they are able to qualify for the certificate. An examination shows the persons who take the examinations where they are weakest and where they can spend their time to the best advantage if they are to improve their work and make it easier to do the job they have selected as a source of livelihood.

# "Encouraging Signposts" Noted at SMA Annual Meeting

The hesitancy of many users to depend on piped fuels exclusively, the increase in price of natural gas in many localities and more coming up, restrictions of gas permits in some areas, the outstanding and extensive campaign being conducted by the National Coal Association through the Bituminous Coal Institute and the effective tie-in and localized effort on the part of Coal Heating Service, the broad program being conducted on the promotion of stoker sales by the Anthracite Institute, the activities of smoke prevention agencies in many cities and the cooperative program on a national basis for cleaner air between enforcement officials and industry all are "encouraging sign posts" to the members of the Stoker Manufacturers Association, as was pointed out by C. T. Burg, retiring president at their 35th Annual Meeting held at the South Shore Inn on Lake Wawasee near Syracuse, Ind. Burg also stated that never in the history of the stoker industry has there been so great a need for aggressive merchandising and thorough selling.

# Chicago Holds a Big Golf Tourney

For the second time this summer the members of the Chicago Warm Air Golf Association faced Of Man Par and each other to wrestle for prizes. The event took place on a hot and humid day, July 10, but this did not lessen the competition one bit. Thirty members and guests battled their way around the River Forest Golf course and to a steak dinner, after which the prizes were awarded. Two of the prizes were beautiful thermometers donated by Marsh Heating Equipment Co.

Mel Jackson, of Grant Wilson, Inc., who is president of the association and one of the better golfers, was prevailed upon to accept a prize for the excellent golf which he has played during the last year and for which he has refused awards on several occasions.

Prizewinners, as announced by W. J. Pennington, of Dole Valve Co. and chairman of the association's awards committee, were as follows:

Low gross — F. N. Schroeder, Aire-Flow Heating Co.

Low net — L. S. Ingham, Aire-Flow Heating Co. High gross — Wayne Limbert, Condensation Engineering Co. High net — Tied by Tom Flaherty, Gicero Sheet Metal Co. and Adolph Schukat, Florence Woodworking Co.

Adolph Schukat, Florence Woodworking Co.

Low putts — J. L. Miller, Crosstown Heating Co. and C. J.

Meunier, Jones Sheet Metal Co.

Blind Bogey — George Bunt, Jones Sheet Metal Co.; W. R. Wallin, Dole Valve Co.; Michael Primich, G. W. Berkheimer Co.; W. L. Aschliman, Condensation Engineering Co.; Herb Venske, Jr., Chicago Furnace Supply Co.; Frank Sirovatka, Subert Heating Co.; J. A. Madden, Maid-O'-Mist, Inc.; R. H. Blackstone, La Salle National Bank.

Other Prizewinners — T. A. Johansen, Central West Machinery Co.; Mel Jackson, Grant Wilson, Inc.; George Morrison, Briggs & Turivas; H. E. Duerst, Lennox Furnace Co.; Harry Himelblau, Himelblau Associates, Inc.; G. F. Anderson, Condensation Engineering Co.; J. F. Butler, Air Products Equipment Co.; Reid Olson, Barney Olson, Inc.; M. B. Wallin, Zintel, Byfield & Co.; E. A. Berg, Alladen Engineering Co.

## **Coming Events**

Oct. 27-31 — American Gas Association, Annual Convention and Gas Appliance Exposition. Auditorium, Atlantic City, N. J. H. Carl Wolf, Managing Director, 420 Lexington Ave., New York, N. Y.

Dec. 3-4 — National Warm Air Heating and Air Conditioning Association 39th Annual Convention. Sheraton-Gibson Hotel, Cincinnati, Ohio. George Boeddener, Managing Director, 145 Public Sq., Cleveland, Ohio.

Jan. 26-30, 1953 — 11th International Heating & Ventilating Exposition (The Air Conditioning Exposition). International Amphitheatre, Chicago. Address inquiries to the exposition management, International Exposition Co., Inc., Grand Central Palace, New York 17, N. Y.

Jan. 26-28, 1953 — National Heating Wholesalers
 Association, Inc. Annual Meeting. Congress
 Hotel, Chicago, Ill. Executive Secretary, 637
 Union Commerce Building, Cleveland 14, Ohio.

# EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For new literature giving product information which is available, see page 152.

# Separator Removes Top Sheet

A SHEET STEEL SEPARATOR designed to permit instant removal of the top sheet of steel from a stack is introduced by Clark-Hopkins Equipment Corporation, Philadelphia. The manufacturer has stated that by using the separator production will be increased by eliminating lost motion in trying to pry oily sheets apart with hands or a sharp instrument. Time and motion study have shown up to 100 per cent increase in production in some applications.



When the separator is used, the top sheet is always raised about 2 in, above the balance of the stack. As each steel sheet is removed, the next one is raised and separated ready for immediate transfer to a press or machine.

Using the device prevents damage to expensive dies, by eliminating the possibility of feeding double sheets into a press. The danger of the operator receiving severe cuts or bruised fingers is lessened, as well as making the removal a faster, more efficient operation.

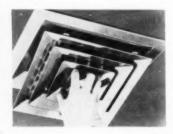
The separators are very compact in size. They are used singly or in pairs, depending on the size sheets to be handled. The four sizes now available from stock are 6½, 9, 10 and 15 in.

AA 1

### **Quickly Installed Air Diffusers**

AIR DEVICES INC., New York City, announces three new models of air diffusers, incorporating exclusive patented built-in diffusing vanes, and featuring a new mounting frame with a removable diffuser core for quick, easy installation.

The simplicity of the new Agitair method of installation is said to eliminate unnecessary time-consuming on the job operations. Only two steps are required by the installer: 1. The mounting frame is fastened to the duct collar. 2. The diffuser core is fitted into the frame and held securely with a turn of a new mounting frame lock. When air velocities' adjustment is desired or space conditions change and a different diffuser pattern is required, the diffuser core is removed by releasing the mounting frame lock.



All Type "RC" series square and rectangular air diffusers are made to suit conditions of each application and are available in a wide range of sizes with vanes and louvers assembled in a variety of patterns to provide blows in from one to four directions, with 100 per cent control of air volume and direction of discharge.

AA 2

## Air Operated Bench Vise

Van Products Co., Erie, Pa., announces two new high-powered, air operated bench vises, Models 610-DP (illustrated) and 1000-DP, with a power ratio of 100:1. The power is furnished by a compact cylinder with an 8 in. bore and two pistons of 50 sq in. each, separated by a removable cylinder head. The construction is rugged yet simple, requiring a minimum of lubrication and no adjustment, says the manufacturer. Leaks are prevented by Vi-Speed automatic "U" packers, and the pistons with

heavy duty cup seals made of synthetic rubber. The cylinders are single-acting, incorporating a fully enclosed spring return. Piston stroke, and therefore, jaw stroke, is 0 to 13% in, maximum, controlled by a safety stop screw.



Each air operated vise has strong jaws 6 in, wide and maximum openings of 10 in, and 11 in, respectively. The illustrated model is available with stationary or swivel base, and the Model 1000-DP with swivel base only. Smooth jaw faces are available on both models, and Model 1000-DP incorporates heavy pipe jaws for all sizes through 6 in. Complete balanced controls are furnished with each unit.

AA 3

# Steel Shelving Holds 1-ton Load

EQUIPTO, DIVISION OF AURORA Equipment Co., Aurora, Ill., announces a new extra-strong line of Iron-Grip Shelving. The shelves have been designed to hold up to 2000 lbs on each individual shelf.

Specially reinforced sides and center of shelves are equipped with 1 in. x 1 in. high carbon angle irons,



1/8 in, thick. Front and rear have U-shaped reinforcing channels.

The ease with which the shelving can be assembled and dismantled makes it useful in heating and sheet metal shops.

A special stud saves 60 per cent of assembly time. The stud slips into a hole in the shelf and then into a keyhole in the upright. The shelf is then pressed down and the assembly is complete. A slope in the stud combines with the slope in the keyhole to form a tight, firm grip.

No nuts, bolts, or tools are needed for speedy shelf adjustment. All shelving is instantly adjustable on 1½ in. centers. All openings are 100 per cent adjustable from the front of units. Dividers, drawers, backs and side panels are available in all sizes.

# **Triple Purpose Ceiling Unit**

A COMBINATION CEILING HEATER, light, and ventilating fan is introduced by NuTone, Inc., Cincinnati. The new unit contains an 1800-watt heating element. It will heat any area up to 575 cu ft, and furnishes 6640 Btu; besides furnishing heat,



it constantly circulates room air. This air, ordinarily rising in a room, is

drawn through the unit, heated, and forced down into the room. The air provides uniform comfort from floor to ceiling. The device is available in four models. AA 5

## **Domestic Water Heater Control**

Providing Close, EVEN water temperature control with safety in operation, a new gas control for domestic water heaters is announced by A-P Controls Corp., Milwaukee, Wis.

Called the Model 50 Gasapack, the unit is completely self-contained. It comprises 100 per cent automatic built-in main and pilot cocks, pilot



filter, 100 per cent shut-off safety pilot, and an automatic main valve. The water temperature is regulated through a contact-type thermo bulb which is fastened against the water tank, and which eliminates the necessity for a spud inserted into the tank.

The control unit and main burner can be mounted integrally, so that the complete assembly can be installed or removed and serviced as a unit. All gas orifices are removable from the front. An easily accessible water temperature adjustment lever aids in quick, accurate settings, and a 3 cu ft pilot filter reduces to a minimum the risk of shut-down due to impurities in the gas. The device can be used on natural, manufactured or L-P gases.

AA 6

# Redesigned Return Air Faces

THE LIMA REGISTER COMPANY, Lima, Ohio, has announced a new feature in its Series 20 Baseboard Return Air Faces and its Series 10FG Flat Sidewall Grilles.

The horizontal louvers on these two series of grilles have been deflected downward 23 to avoid the possibility of looking between the louvers at the unsightly stackhead or building construction behind the grilles. This change of the horizontal louvers has no effect on the free flow of air through the grille.

Other than this new feature, there are no changes in the basic quality or design of these units, nor has there been any increase in price. The



This coupon is for your convenience in obtaining more information about any of the equipment mentioned in this issue or copies of the literature offered in the readers' service section.

Keep your record of sources of supply up to date by adding the new products and companies listed here to your January 1952 AMERICAN ARTISAN annual directory section.

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8-52

grilles are designed to retain the lasting beauty of the attractive metallic finish, plus the added strength of resistance welding. AA 7

# All Metal Electric Spray Gun

TRIGGER ACTION combined with light weight makes the Champion All Metal Electric Spray Gun useful for many different industrial applications, according to its manufacturer, Champion Implement Corp., New York. An electric pumping device delivers over 90 pounds of pressure at 7200 strokes per minute. No compressor is needed.



Large industrial organizations use this heavy-duty spray gun for spraying paints, lacquers, enamels, varnishes, chemicals, oils, etc. It is suitable for all types of work including painting, refinishing, touch-upwork, cover up coats, rustproofing, stenciling, and waterproofing.

The spray gun is a self-contained appliance made of stainless steel with sturdy vibrator motor in the handle. It is provided with a balanced handle and fully adjustable spray. A big 25 oz. flint glass jar is supplied with every model. It uses ac current from a standard 110 volt light socket. Guns are easily cleaned and will not clog.

AA 8

## Oil-Fired furnace

OF INTEREST TO DEALERS specializing in home furnace installations is the new line of Wondaire oil-fired domestic-type furnaces made by Cox Manufacturing Co., Ridgeville, Ind. Available in five models these furnaces are designed around the principle that warm-air circulation heating is the cheapest, most efficient and most reliable for homes. They can be installed in basements or utility rooms, attics or other normally unused spaces, eliminating the waste of the traditional "furnace room."

The two smaller Wondaire models deliver 80,000 and 95,000 Btu's at the bonnet. The 80,000 Btu "Hi-Boy" measures 20 in. wide, 21 in. deep and 53 in. high, consuming only 0.75 gallons of fuel oil per hour of operation. The largest of the three "Low-Boy" units delivers up to 212,-000 Btu's of heat and measures 29 in. wide, 64 in. deep and 51 in. high. Thermostatic and safety controls provide fully automatic operation. Economy of operation is obtained by the 50 per cent greater "prime-heating" surface, made possible by tubular construction of the heat exchanger. The pre-cast refractory is installed at the factory.



These furnaces feature low stack temperatures and space heating begins only 90 seconds after the burner comes on. A two-stage pump delivers fuel through long lines with ease, and both blower and motor are mounted free of the furnace jacket, eliminating vibration noises. Humidifiers are available, and gas-fired models can be furnished with the same general specifications and capacities as the oil-fired units. AA 9

# **One-Story Home Heating Unit**

A NEW COUNTERFLO UNIT for residential heating has been put on the market by Turb-O-Tube Furnace, Inc., Buffalo, N. Y. It is designed to meet a need in the trend toward one-story, basementless homes where floor space is at a premium. Its maximum output is 70,000 Btu's at the bonnet.

Features of this furnace include its small size, the location of the combination control, rapid temperature rise and the fact that the controls, burner, and stack are located on the front of the furnace to permit installation in alcoves and recessed areas.

AA 10

# Perimeter Air Diffuser

A NEW PERIMETER AIR DIFFUSER for heating and cooling is introduced by Titus, Incorporated, Waterloo, Iowa. With the new unit, installation is made with the back of the grille flush with the wall. Ductwork leading to the grille comes through the floor and never through the wall itself.



This arrangement is claimed to provide savings in time and labor to the installation men. There is no disfiguring of the walls. The air diffuser merely slips over the boot.

Baffles on the inside of the diffuser throw air streams in a 180° are and completely blanket the outside wall with warm or cold air, depending on whether the installation is for heating or cooling, the manufacturer says. The diffusers are provided with a finish coat that blends well with any furnishing. No decorating is required.

AA 11

### Portable Oil Fired Unit

A PORTABLE OIL FIRED unit which may be used for heating in the winter or as a fan in the summer has been introduced by Auburn Burner Co., Auburn, Ind. Called the Porta-Heet, it is stated to distribute heat evenly on all sides from the bottom of the heater at work zone level, thus heating from the floor up.

A special Auburn oil burner fires directly into the combustion chamber; all of the heat generated is used by carrying the products of combustion into the air stream. There is no smoke, sparks or odor, and no carbon monoxide fumes, the manufacturer says. The Porta Heet can be operated either as a self-contained flueless unit or it can be equipped with a flue for the disposal of waste gases. When used without a flue, free heat is directed back into the blower and discharged heated to a still higher temperature.



The unit is mounted on wheels like a hand truck, facilitating its removal by one man to any space where it may be required. AA 12

# **Automatic Gas Shut-Off**

ELECTRIC CURRENT IS NOT REQUIRED to operate the new Gastimer automatic gas shut-off, manufactured by R. B. Enterprises, Inc., Detroit. This precision timing mechanism can be set for any burning period up to one hour. Gas is automatically shut off and a bell signal is sounded at the selected time.

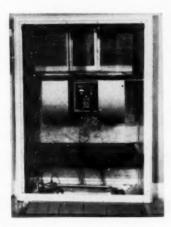


A self-contained unit which can be installed in any position, it is stated to increase the convenience, economy and safety of gas appliances that are manually operated. According to its makers, the device has special advantages for manufacturers of incinerators, water heaters, laundry stoves, hot plates and room heaters, whose products do not warrant the use of electrically operated controls.

The device is provided with a solid brass valve with ½ in, female inlet and outlet. For uninterrupted gas flow, it has a manual hold-open feature. The timer mechanism may be removed without removing the valve or cutting off the gas. Pilot take-off is available upon request. The unit's capacity is 47,900 Btu per hour of 1000 Btu per cu. ft., 0.7 in. sp. gr. Natural gas at 0.5 in. water column pressure drop: or 25,800 Btu per hour of 500 Btu per cu. ft. Manufactured gas, 0.6 in. sp. gr., at 0.5 in. pressure drop. AA 13

# **Blower Type Conversion Unit**

A CONVERSION UNIT designed for installation over existing dual floor furnaces has recently been introduced by Air Comfort Co., South Gate, Calif. The new product, called the Air Comfort Conditioner, is a blower filter unit within a cabinet which is adaptable to the thousands of dual floor furnaces now in use.



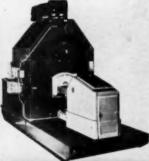
Installation of this unit guarantees an abundance of clean, properly humidified warm air circulated throughout the home, the manufacturer states.

As shown in the illustration, warm and cool air plenums occupy the top section of the cabinet; dual blowers with their motor are located just below the plenums. A combination fan and limit switch is mounted on the blower assembly. An automatic humidifier is located in the base of the unit, directly beneath the filter. AA 14

## Portable Stoker Fired Heater

ARTHUR A. OLSON AND CO., Canfield, Ohio, manufacturers of unit heaters, announces its newly designed portable, stoker fired, unit heater.

This heater was especially designed to provide spot heating for specific areas in large warehouses and mills. The heater can be moved easily from place to place as needed, without dismantling any part, and still offer all the efficient features of the finest permanent base heater, it is claimed by the manufacturer.



These heaters are delivered, completely assembled, with stoker and refractory secured in place. They are factory wired and ready for operation.

AA 15

## High Pressure Gas Valve

Addition of a 3½ pound capacity model to its line of magnetic gas valves is announced by the Minneapolis-Honeywell Regulator Co., Minneapolis. It is designed for pilot line service on high pressure burner installations where pressurized pilots are desired.

The new high pressure valve is available for 115 or 230 volt service. It is available in ½ and ¾ in. sizes, featuring a hammer action plunger and a stainless steel seat cast into the valve body. The hammer action plunger insures positive opening and closing of the valve at rated pressures. The stainless steel seat prolongs the life of the valve and assures tight closing.

AA 16

(Please turn to page 146)

# PROFITABLE Thermo-Drip TO INSTALL Automatic Humidifier

- \* VALVES DON'T
- ★ NO STAGNANT POOL TO REHEAT
  - ★ SUPER-SENSITIVE THERMOSTAT
  - \* OUTSIDE SCREW ADJUSTER
  - \* EASY INSTALLATION
  - \* ONE KIT TO PURCHASE



OUR VOLUME SALES PROVE IT . . . THERMO-DRIP GIVES FURNACE OWNERS GREATER CUSTOMER SATISFACTION.

PROSPECTS EASILY SEE THE ADVANTAGES OF HUMIDIFYING BY AUTOMATICALLY DROPPING WATER ON A SIZZLING HOT STAINLESS STEEL PAN.

Too, it's easy to demonstrate why this method is the *most efficient*, *most dependable* way to put moisture in the air.

Yes - Thermo-Drip gives faster, most efficient vaporization.

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# Now! a SIDEWALL PERIMETER DIFFUSER

THAT REALLY DOES A JOB ON SIDEWALL INSTALLATION!



No. 15 SIDEWALL PERIMETER DIFFUSER

Successful Perimeter Heating Requires COR-RECT AIR DISTRIBUTION USE -

Air Control

FACE DESIGN - Gives fast diffusion of warm air with room air, and without drafts.

FIN DESIGN - Fins ore so arranged that they deliver a complete blanket of warm air from the floor upword.

CURVED DAMPER - Delivers air to the register face at low resistance and assures even air distribution over the face.

CENTER TURNING VANE \_\_ Splits oir stream so that the correct amount of air is delivered to the lower section of the face.

FLARED TOP FIN SECTION - Prevents air from scrubbing the wall.

ADJUSTO-STOP \_ Permits .. balancing system at the register face.











Solves the difficult problem of correctly blanketing a cold wall from a side wall location. Works equally well on small pipe (4" or 4 1/2") perimeter systems or on standard conventional duct and may also be used on the slab type of perimeter system.

Low Cost — A wide air pattern that blankets a rectangular wall area — Low resistance — Eliminates air scrubbing the wall — No drafts, air pattern is close to the wall — Diffuser can be balanced at the face - Styled for any interior.

Assure yourself of top performance on your Perimeter Heating Systems by using Air Control No. 15 Sidewall Diffusers.

Write for Bulletin 83-ac on the complete Air Control Diffuser Line.

A COMPLETE PERIMETER DIFFUSER LINE







For Sidewall

CONTROL PRODUCTS

COOPERSVILLE

MICHIGAN

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# CHEVROLET Advance- TRUCKS



# Saves you money on purchase

Check the price on a Chevrolet truck that's the right size, type and capacity to handle your work. You're going to find that this Chevrolet truck lists for less than any other make of truck capable of doing the job. Here's an immediate, cash saving.



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Chevrolet trucks are factory-matched to the job—hires, axles, frame, springs, engine, transmission, brakes. It's the Chevrolet idea to provide you with exactly as much truck as you need and no more. Chevrolet truck users know this idea pays off.



## Cuts operating costs

Day in, day out a Chevrolet truck works for rock-bottom "wages" on fuel and upkeep. It brings you the proved economy of Yalve-in-Head engine, with 4-Way Lubrication to reduce engine wear. Extra-rugged features cut maintenance costs.



### Saves money on trade-in

It's right in the records that Chevrolet trucks traditionally bring more money on the used truck market—and that can mean more money for you when you trade or sell. There's another reason why more truck users choose Chevrolet than any other make.

# CHEVROLET ADVANCE-DESIGN TRUCK FEATURES -

TWO GREAT VALVE-IN-HEAD ENGINES— Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load • POWER-JET CARBU-RETOR—fer smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH for easy-action engagement • SYNCHRO-MESH TRANSMISSION—for fast, smooth shifting e HYPOID REAR AXIE—for dependability and long life a TORQUE-ACTION BRAKES—on light-duly medels e PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES—on medium-duly models e TWIN-ACTION REAR BRAKES—on heavy-duly models e DUAL-SHOE PARKING BRAKE—for greater holding ability on heavy-

duty medels • CAB SEAT—with double-deck springs for complete riding comfort • VENTI-PANES—for improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING—for easier handling • UNIT-DESIGNED BODIES—for greater load protection • ADVANCE-DESIGN STYLING—increased comfort and medern appearance.

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# efficiently designed for sidewall and baseboard installations

The Standforated sidewall registers have horizontal bendable bars, set

antal bandable bars, sat at time of fabrication for 30 degree downward deflection. Each bar can be easily reedjusted with a tool to any angle for upward, downward or straight flow. No. 41H SIDEWALL REGISTER has a single-domper and Yig" turned down edge for flush sidewall installation. Spange rubber gaskets are attached. No. 43H BASEDARD REGISTER has a single-domper and 7s" projection top and two ends, for baseboard installation. Also available as: No. 42H BASEBOARD INTAKE and NO. 40H SIDEWALL GRILLE Prime coat or metallic finish—standard screw hales. Over-all of face is listed duct dimension plus 13%".

BUCT SIZE

8" 4" 4" 4" 10" 4 8" 10" 4 8" 10" 4 8" 10" 4 8" 12" 4 5" 12" 4 8" 12" 4 8" 14" 4 8

stock Name

Registers are visible symbols of comfort. On your jobs, you want the best to show...so, to be sure, use Standard Stamping's Registers and Grilles. All Standard registers are engineered for accurate and easy operation. Illustrated above is model No. 41H Sidewall Register. The side view shows one of the two damper tension screws that are adjustable to meet your operational requirements. The tension screws are set at the factory for positive operation. On the damper control lever is Standard's new FRACTIONATOR VOLUME CONTROL.

This amazing new device allows you to set the damper

for optimum volume in balancing your heating system, and maintain that balance permanently.

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Standard Stamping & Perforating Co.

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# U·S·S 17 Stainless Steel is the lowest-cost quality material you can use today

(No CMP tickets needed)

For strength, permanence and minimum maintenance, no other material can match the performance of Stainless Steel sheet and strip in gutters, downspouts and similar applications. And, most important of all to you today, a suitable grade of Stainless is readily available at a cost competitive with any other quality gutter and downspout material.

That grade is U·S·S 17 (Type 430) Stainless. Containing no nickel, it is unaffected by the shortages that limit the use of certain Stainless grades. Since January 28,

1952, no CMP tickets have been needed for this grade. You can use it now on all types of jobs.

U·S·S 17 Stainless Steel gives the kind of performance that will please your most particular customers. It resists corrosion; it requires no painting or other surface protection; cleaning with soap and water will keep its surface bright. The minimum maintenance and replacement required make the ultimate cost extremely low. The strength and corrosion resistance of Stainless Steel permit the use of thinner gages with no sacrifice in service life.

From the standpoint of fabrication, you'll find Stainless Steel imposes no difficulty. Any sheet metal shop that maintains good standards of workmanship can handle it in stride. The usual shop equipment is adequate. Installation procedures are similar to that of other materials.

Your steel supplier can furnish you with U·S·S 17 Stainless Steel sheet and strip in sizes and gages you require. Get full details on this material and be prepared to handle current and future jobs that call for quality material.

# U·S·S STAINLESS STEEL

AMERICAN STEEL & WIRE ... COLUMBIA-GENEVA STEEL ... NATIONAL TUBE ... TENNESSEE COAL & IRON UNITED STATES STEEL SUPPLY, WAREHOUSE DISTRIBUTORS ..., Divisions of UNITED STATES STEEL COMPANY, PITTSBURGH



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# PROFIT

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SMASHING, COLORFUL ADVERTISEMENTS month after month

in Saturday Evening Post and Better Homes & Gardens! Ads aimed at your customers... homeowners... prospective homeowners... people with money in their pockets and heating on their minds! Ads that tell readers to visit you for the best heating equipment money can buy! Ads with just one purpose—to help you sell!

And remember, you're selling one of the most complete oil and gas fired lines in the heating industry! A complete line of Warm Air Furnaces, Boilers and Conversion Burners . . . all backed by over 30 years of Fluid Heat research and engineering know-how! Automatic heating equipment that fits every home heating need and gives amazingly trouble-free service, remarkable efficiency, and long life.

That's the sensational profit campaign Fluid Heat has for you in '52! Be sure you cash in by showing and pushing Fluid Heat! If you're not already selling this high-profit, top-quality line, write us for details. Address: Fluid Heat Div., Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Md.

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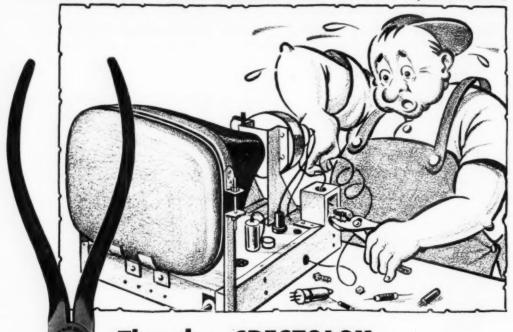
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# There's a CRESTOLOY PLIER for EVERY JOB

No. 654, Crestoloy Long Nose, Side Cutting Pliers. Ideal for telephone, electronic and fine electrical work.

Crescent makes 17 different patterns, 27 sizes, of Crestoloy Pliers to provide the *proper tool* for almost every conceivable plier job. Forged from special "Crestoloy" Steel, every single one of these fine tools is individually tested before it leaves the factory. Your Hardware Dealer or Industrial Distributor will help you select the proper type for your job.

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Has all the answers. It tells what tools to use and how to use them. Fully illustrated. A postcard will bring it to you. Send today.

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Why gamble with ordinary heating equipment when you've got a natural winner with Utility's newly-developed 100FA Forced Air Furnace! The 100FA is the big brother of the sensationally successful Utility 70FA. And the 100FA should be just as popular with your customers for the same reasons: Extremely high heating performance (100,000 BTU input) at an unbelievably low price-luxury forced air heating for no more than ordinary

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# Save 3.15 POUNDS PER SHEET\*

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# STAINLESS STEEL

When you order sheet by gauge number the permissible A. I. S. I. variation in thickness is plus or minus 10%. Thusly, if you order 18 gauge, you may receive a sheet .052 thick when .0475 would suit your purpose. Using a standard 18 gauge 36"x 120" sheet as an example, the theoretical weight is 63 pounds, but this weight could permissibly vary between 65.52 pounds and 59.22 pounds.

A sheet of MicroRold .0475 thick with a tolerance of only 3% would weigh 59.85 pounds thus insuring a saving of 3.15 pounds from the theoretical average-weight, or 5.67 pounds from the maximum, while still remaining within the 18 gauge ordering range.

Weight of One Sheet of 18 Gauge 36" x 120" Plus or Minus 10% .052"—65.52 Pounds .051"—64.26 Pounds .050"—63.00 Pounds .049"—61.74 Pounds .048"—60.48 Pounds

.047"-59.22 Pounds

Theoretical Wt. 63.00 Pounds

Weight of the same size sheet of .0475 plus or minus 3% is 59.85 pounds with an average saving of 3.15 pounds per sheet.

Multiply this saving by the number of sheets you use per month and the price per pound and you have a good dollar and cents reason for buying MicroRold.

\* Each additional 1/1000" of thickness adds 1.26 pounds weight per sheet.



# WASHINGTON STEEL CORPORATION

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MINIMUM Sales Resistance . . . You can say "Yes" with enthusiasm to every question about modern features that spell cleanliness, safety, convenience, quality, dependability and automatic, care-free operation.

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MAXIMUM Appearance ... Streamlined design handsomely styled in deep maroon or maroon and grey to blend with color schemes anywhere.

MAXIMUM Selection . . . No matter what the heating problem (gas, oil or coal) Thatcher has the correct model and size to meet the need.

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MAXIMUM Profit . . . In the original sales, and in greater volume because of word-of-mouth praise and prestige of Thatcher equipment. That means more and more sales come your way with less selling effort and expense.

F YOU were buying heating equipment instead of selling it, chances are ten to one you, too, would insist on getting all the following features for your investment:

Even-temperature warmth for perfect indoor comfort. The carefree convenience of automatic heat. The latest in engineering principles for long, trouble-free operation and efficient performance. Eye-pleasing modern design. A model and size that will meet your exact needs. A well-known brand name at a price within your budget.

Thatcher, the oldest and one of the most reliable names in heating, has the line that was constructed to give homeowners all these features . . . and more!

Take the first step toward getting a bigger share of the new homes and replacement markets today. Write Thatcher Furnace Company, Garwood, New Jersey for our new catalog containing all the facts!









include Snaptite Eaves Trough; "K" Gutter; Plain Round, corrugated Round and Corru-gated Squave Conductor Pipe; Ridge Roll; Flashing; Roll Valley; plus a complete line of all necessary fittings. All are made of 28-gauge Republic ENDURO Stainless Steel, Type 430, dull coat finish.

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If you've hesitated in the past about taking those high-profit stainless steel roof drainage jobs, forget your fears. Berger Drainage Products made of Republic ENDURO Stainless Steel are easy to bang. No special skill is needed, other than your own knowledge and experience.

Your usual tools and equipment are fine. Berger ENDURO Drainage Products work as easily as those made of familiar 26-gauge galvanized steel . . . easier, in some cases, because Berger is making "Snap-Tite" of ENDURO. That's the patented eaves trough you just slip, snap and seal.

There's no trick to soldering ENDURO, either. Your iron should be a large one, heated slightly more than usual. Remember to clean off all flux immediately after soldering. Use a 5% to 10% solution of washing soda with water.

Be sure to use all-ENDURO fittings and accessories. Then you'll have hung a drainage system that's stronger and more attractive than ordinary systems . . . that resists rust and corrosion . . . that won't bleed or discolor paint... that resists abrasion and denting ... that requires little or no maintenance ... that pays you well.

You'll find jobber stocks of ready-to-use Berger ENDURO Stainless Steel Roof Drainage Products in most areas . . . as well as Berger Drainage Products of Toncan Iron, and galvanized steel.

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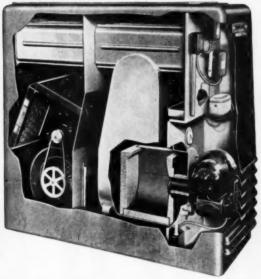


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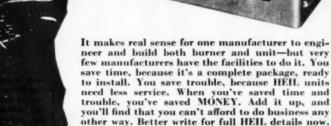
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saves you time...trouble...money





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You'll like doing business with HEIL.

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Stand up

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Whatever the application—
for heating equipment, blowers, or pumps—
you can depend on Delco motors
to deliver continuous trouble-free power
far longer than ordinary motors.
And there are a lot of reasons
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Critical selection of materials and careful dynamic balance— plus special features such as uniflow pressure-cast rotor conductors, steel backed tin babbitt sleeve bearings, varnish-dipped and baked motor windings—make Delco motors the motors you want for your product.

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# DELCO



Delco flange-mounted motors, split-phase, 50- and 60-cycle, constant speed—16- to 14-horse-power ratings.



### MOTORS FOR BLOWERS

Delco resilient-mounted motors, split-phase and capacitor-start types, single- and two-speed designs—16- to ¼-horsepower ratings.



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The booming small homes market is a goldmine for the Armstrong dealer. He's got what it takes. He's got twelve different models especially suited to today's small home. He doesn't evade, or juggle, or substitute. He names a mighty sweet price on exactly the right furnace . . . and he makes sales the other boys can't reach.

Oil? Everything! Counterflow; hi-boy; horizontal; forced-air and gravity basement models.

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Coal? Forced-air and gravity basement models.

And as an Armstrong dealer you have that wide range at your fingertips without excessive investment. Your nearby Armstrong wholesaler carries your inventory . . . does your warehousing . . . gives you all the benefit of a tremendous line, immediately available.

(Don't get the idea that the Armstrong line is limited to units for small homes. You'll find a complete selection of styles and sizes, with units available for every residential heating requirement.)

Armstrong helps you sell, too. Provides an expanding program of national advertising backed by a wealth of tie-in promotion materials, special sales help and seasonal campaigns, and the engineering "know-how" of an alert, progressive organization. For instance, the new Armstrong brochure "Heating the Basementless Home" tells architects and builders how to handle that problem.

Ask your Armstrong distributor for a copy. If you don't know him, a postal card to us will bring it.



Armstrong's two huge plants serve both sides of the continent quickly, economically. A werehousing distributer, with a complete Armstrong levestory, is within a stone's flower of everywhere. Wherever you are, Armstrong's distribution system is set up to sorve you. It's better, quicker, more profitable . . . &er for. Please address Dept. AA at our plant nearest you.



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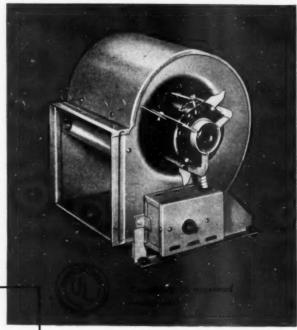
offers you the ALL NEW, refined and improved

Small, compact, efficient and quiet

# A 7½" Double Inlet Blower with motor built INTO the Unit!

The ALL NEW LAU A7-DD pictured here is the perfect unit for in-a-wall gas and oil furnaces. It is the one answer to manufacturers who build hi-boy, low-capacity units. It is the ONLY unit completely UL approved, covering the entire unit (also approvable in combination with furnace).

The A7-DD has fingertip adjustment for wide range 7-speed control. For furnaces to be rated at capacities from 44,000 to 76,000 b.t.u. per hour (bonnet) at 100° temperature rise—or capacities from 31,000 to 54,000 b.t.u. per hour (bonnet) at 70° temperature rise.







Write dept. A for full information

# Lau Series "A" blower assemblies

The all-time outstanding achievement in the blower field. Overall size is considerably smaller than formerly and many features are revolutionary—exclusive with Lau—and protected. Entire unit is die-formed, lending itself to mass production on precision-bullt equipment with reflected low costs. Has 1-pc. motor mounting, self-aligning bearing, new LAUsteel pulley wheel. Write for Catalog 602 giving complete dimensions and performance data.



BLOWER COMPANY . DAYTON 7, OHIO

Write 2015 HOME AVE. For Further Data
World's Largest Manufacturer of Furnace Blowers

# Boiler and Furnace Manufacturers Considering Low Input Oil Fired Units

The combination for quiet, non-pulsating low input oil firing of small homes

To give you competitive advantages in the small-home heating field—to give your dealers something they can really talk about and sell. Something to meet the small home owner's demand for ECONOMY and EFFICIENCY—THE MILLER FLANGE-MOUNTED VAPOR-IZING OIL-BURNER WITH MILLER CONTROLS.

Designed exclusively for small homes, two sizes—input range of .6 to .9 gph. It is precision-built, quality-controlled, factory tested, field proven. Clean-burning. Quiet operation. Variable flame shape for best efficiency. Fixed high fire and pilot—Fixed air setting—No field adjustments required. A constant-level valve with automatic safety—no manual reset. A room thermostat that gives very close temperature control. Tailored to individual furnace design, peckaged ready for use.

miller oil burner and controls for small home heating

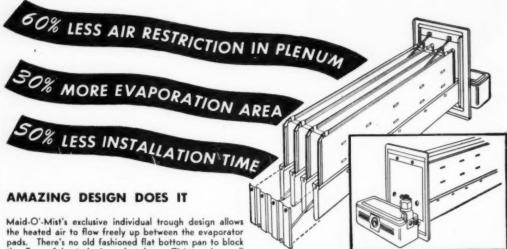


MEATING PRODUCTS DIVISION, MERIDEN, CONNECTICUT ILLINGHATING CIVISION: Plannamet, Incandingunel, Narcury Lighting Equipment MEATING PRODUCTS DIVISION: Demonit. ON Burners and Liquid Faul Devices.

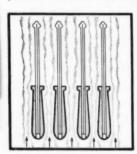
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# MAID-O'-MIST CONVECTOR HUMIDIFIERS

... for you ... for your customers?



the flow of heated air and reduce efficiency in small plenums. The entire area of each of the large evaporat-



ing pads is in direct contact with the warm air flow, thus providing 30% more evaporating area. Maid-O'-Mist Convector Humidifiers reduce air restriction to a minimum and at the same time provide this greater evaporating area. That's why Maid-O'-Mist exclusive design is ideal for the small plenums of all modern warm air furnaces.

# READY TO INSTALL

Maid-O'-Mist Convector Humidifiers come completely assembled. All you do is cut the proper size opening in the plenum and attach the plenum flange frame. Slip in the factory assembled unit and make the necessary water connections. That's all.

Remember . . . . Maid-O'-Mist's advantages mean more profit for you. Make every installation a Maid-O'-Mist Convector Humidifier. Get full information from your jobber or write for Bulletin 701-B.

# 13 DIFFERENT SIZES AVAILABLE

Maid-O'-Mist Convector Humidifiers have evaporation capacities of 1 to 10 gallons of water per day, depending on size. Made entirely of non-ferrous metal and equipped with automatic (float-operated) supply valve. Design permits adjustment of up to 30° pitch for sloping bonnet



AUTOMATIC HUMIDIFIERS . . . . AUTO-VENTS WATER LINE CONTROLS . HEATING SPECIALTIES MAID:0'- MIST, Inc.

3217 NORTH PULASKI ROAD . CHICAGO 41, ILL.

# Sell the flame that tunes itself!

The A.O. Smith Model 205
Deluxe GAS CONVERSION Burner
with "Magic Heet" Control



No more "on-off" operation. This burner actually *tunes* itself gradually ...up or down...to conform to outside temperature changes.

The only burner designed to entrain air in such a way that an efficient flame is maintained at all times with every change in gas input. There's no danger of flash back... nothing to prevent perfect combustion with modulation.

The secret of its automatic response to heat demands is its "Magic Heet" Control. It is actuated by the temperature of the return air in warm air systems and the return water in forced-flow hot water systems. Steady, even home temperatures are maintained regardless of outdoor temperature changes.

Sell Comfort! Sell the A. O. Smith Model 205. Write today for complete information.



"Magic Heet" Control

# A.O.Smith

SALES: Atlanta · Chicago 4 · Dallas 2 · Denver 2 · Detroit 21 · Houston 2 Los Angeles 22 · Milwaukee 8 · New York 17 · Philadelphia 3 · Pittsburgh 19 San Francisco 4 · Sectile 1 · Springfield, Mass. · Washington 6, D. C. SERVICE: Chicago 17 · Dallas 1 · Los Angeles 12 · Union, N. J. International Division: Milwaukee 1 · In Canada: John Inglis Co., Ltd., Tarasto

Manufacturers also of:









Home Heating Permogles Automati Boilers Water Heaters

Commercial Water Heater

A. O. Smith Corporation Permeglas-Heating Division, Dept. AA-852 Kankakee, Illinois

Send me, without obligation, complete information on A. O. Smith De luxe (Model 205) Gas Conversion Burners with Magic Heet Control.

Name.

Firm

Address

City\_\_

Zone State\_

HOW TO 311211 2130313

STOCK TRIED and TESTED

CRISE

**TEMPERATURE** CONTROLS



YOU CAN USE THIS CRISE UNIT EITHER AS A WARM AIR LIMIT CONTROL OR A FAN CONTROL

No matter what you pay you can't buy better built controls than the reasonably priced Crise line. Nowhere else can you get such installation ease, plus the flexibility in application that permits you to stock fewer types of controls. Installation men say that

CRISE CONTROLS DIVISION ACRO MANUFACTURING COMPANY COLUMBUS 16, OHIO

by carrying dual purpose Crise controls to the job they are sure to have the right unit at hand. Consider the advantages of the Crise Type FOL-60 (shown with cover removed). Then write for catalog and attractive price schedule.

WIRE TERMINALS 1 & 2 FOR LIMIT CONTROL

This unit then becomes a safety hi-limit control for warm air furnaces to prevent overheating

WIRE TERMINALS 2 & 3 FOR FAN CONTROL

The unit now becomes a fan or blower





TYPE FOL.50 Hot water control, surface or strapon type



TYPE FAL-10 Combination furnor fon and limit control



TYPE FAE.15 Two speed for



TYPE FAL-30 Hot water control, dual circuit, immersion type



Hat water control, immersion type

# Chrysler Airtemp Comfort Zone

# BETTER BUSINESS BUILDER FOR YOU

Look over these ten points for profit. You'll readily see why the Chrysler Airtemp Comfort Zone is a big business builder for dealers. With Chrysler Airtemp's complete line of all year products - heating, air conditioning and refrigeration-every businessman, every homeowner is a red hot prospect. Fill in the coupon today and let us send you complete details on how you can get in the Chrysler Airtemp Comfort Zone as an

authorized dealer.

# POINTS FOR PROFIT

1 Chrysler Airtemp—a recognized name and a division of a famous, nationally-known manufacturer. Chrysler Corporation—pro-

vides an unequalled engineering background. All Chrysler Airtemp products are sold through factory appointed Chrysler Airtemp

Chrysler Airtemp dealers are appointed on the basis of local market opportunities. Chrysler Airtemp products cover three basic markets residential, commercial and in-

Chrysler Airtemp engineered and pioneered the original "Packaged" Air Conditioner and developed the first Year-Round air and developed the first conditioning (combination heating and cooling) system for the home. The cooling unit alone can be added to any forced warm

Chrysler Airtemp offers dealers a wide range of capacities in warm air furnaces range or capacities in warm air furnaces for gas and oil—cooling units, from ¾ HP to 100 HP—air filters and dehumidifiers.

Chrysler Airtemp sales programs are designed to capture both new and replacement markets, plus service revenue.

Chrysler Airtemp maintains 15 Regional Sales Offices, a corps of field engineers and sares offices, a corps of field engineers of help

Chrysler Airtemp national advertising has developed, over the years, a great public acceptance and demand for Chrysler Air-

temp products.

Chrysler Airtemp cooperative advertising plans and sales campaigns provide real, hard-hitting dealer helps at the local level.

## \*COMPLETE FIVE-YEAR WARRANTY

Sealed Radial Compressor units in Chrysler Airtemp 'Packaged" Air Conditioners carry an optional five-year warranty, through dealers. This warranty covers compressor replacement, freight to and from the factory, plus a labor allowance for removing and installing compressor assemblies.

# FOR YOUR CONVENIENCE

Airtemp Division, Chrysler Corporation Dayton 1, Ohio

Send immediately full details about Chrysler Airtemp's dealer arrangements without obligations.

Address\_\_ Phone Zone Sinie

Chrysler Airte

AIR CONDITIONING . HEATING . COMMERCIAL REFRIGERATION Airtemy Division of Chrysler Corporation, Dayton 1, Ohio



# ARMCO STEEL CORPORAT



3922 Curtis Street, Middletown, Ohio . Distributors from Coast to Coast . Export: The Armco International Corporation

# Call your Armco Distributor!

If you need

For your convenience there are more than 70 stocks of Armco Stainless Steels in warehouses of Armco Distributors throughout the United States. This means that if you need standard stainless steel in a hurry, it can probably be delivered to you within 24 hours.

### VARIETY OF TYPES

Armco Stainless Steel Distributors carry ample stocks of sheets, bars and wire in different types and a multitude of sizes and gages, along with stainless screws, nuts and bolts, and accessories. No stainless order is too small for their careful attention.

# ADVICE WHEN YOU NEED IT

Go to your Armco Distributor for sound advice on the selection of a stainless steel. He knows his stainless, and is backed up by Armco's many years of experience. Besides, he can supply you with Armco booklets on all phases of stainless fabrication. Just name your problem!

# ASK FOR NEW WALL CHART

Be sure to ask for the new 25 by 39-inch wall chart, "Cutting and Forming Armco Stainless Steels." It is a pictorial story in 12 photographs of the best ways to handle, cut and form stainless steel sheets and strip.

# CUTS COST UP TO

# DOOR and PARTITION GRILLE

NO SEE-THRU

Cut-a-way view shows new auxiliary frame. Quickens installation—makes a smoother appearance.

NEVER BEFORE SUCH A DOOR GRILLE FOR THE MONEY. It's so far ahead in design, construction and performance that it's guaranteed to open your eyes

Skilled Airfoil designers drew, tested and built it to give architects, contractors and engineers the finest door grille possible. It's made to OUTLAST—OUT PERFORM.

First—it's more rugged. Will withstand heaviest use and abuse for years and years. Second—it's low in cost, competitively priced. Third—it's good looking. Will add beauty every time it is installed. Fourth—lowers are absolutely secure. Do not rattle when door is slammed.

. ADAPTABLE TO ANY

DOOR WIDTH ... MADE

TO ANY SIZE.

- HEAVY GAUGE STEEL. REINFORCED ON EITHER SIDE.
- 73% FREE AREA. ONE-PIECE FRAME.
  - CUTS DAMAGE AND RE-PLACEMENT COSTS. NO EXPENSIVE CALL BACKS.

GET THE COMPLETE INFORMATION ON THESE AND ALL AIRFOIL GRILLES TODAY



FREE

## CHECK TYPE OF GRILLE ON WHICH INFORMATION IS DESIRED

- Air conditioning outlets
  Return air grilles and
  registers
- Perforated metal and arnamental grilles
- ☐ Volume controllers
- | Industrial grilles | Special made-to-order grilles
- TITUS MANUFACTURING CORP., WATERLOO, IOWA

  RUSH information on new door and partition Grilles.
- Send complete catalog.
  Send literature on above checked items.

ADDRESS\_

AUURESS.

STATE



# YOU CAN BEAT ALL COMPETITION

AND MAKE SSS

ELTA FURNACE







3 SIZES

Versatilel Only 5' top to bottom - hides itself away in basement, utility room, or even a closet. One stock model with return at both sides and bottom. Three sizes - 78,000, 90,000 and 110,000 BTU/HR at bonnet. Factory assembled - ready for installation.



LOW-BOY MODEL LB-90

Popular style. Only 45" tall - 20" wide! 93,000 BTU/HR at bonnet. Factory assembled - ready for installation.





# COUNTERFLOW

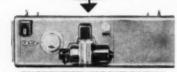
3 SIZES

Gaining popularity in slab-constructed houses and crawl-space bungalows. Only 5' tall — 20" bungalows. Only 5' tall - 20" wide - 28" in depth - will even fit in a closet! Front or rear flue outlet optional. Three sizes — 78,000, 90,000 and 110,000 BTU/ HR. Factory assembled.



# **GRAVITY FURNACE**

For LOW price homes! Ideal as a replacement furnace! Model GA 75 - 75,000 BTU HR output. Measures 52" tall — 22" wide — 28" in depth. Efficient 3-pass heat exchanger.



**AMERICA'S** 

**FURNACE** 

# SUSPENDED-HORIZONTAL

Excellent for special-purpose heating applications affic, low-basement, ceiling and underneath the floor. Four sizes — 75,000, 110,000, 160,000 and 210,000 BTU/HR output. Factory assembled with hanger posts or base flange-stands.





# DUAL

# WALL FURNACE

MODEL WA-100

Especially created for small-home developments, Designed for wall installation with outlets on both sides. A money and space-saving forced-air heating system, requiring no ducts. \$2.000 BTU HR register roting. Factory assembled and wired ready for installation.

All DELTA Furnaces Interchangeable OIL to GAS — GAS to OIL

WRITE OR WIRE NOW FOR PRICES AND COMPLETE DETAILS

# **DELTA** HEATING CORPORATION

TRENTON 8, NEW JERSEY

# "WHATS IN IT FOR ME?" "gla

HIGHER MARK-UP! You're in business to make money. No matter how much you sell of a product, if it doesn't allow you a reasonable mark-up it can't be profitable. A sound American Air Filter distribution policy assures you a better-than-average mark-up for every AMER-glas filter you sell.

REPEAT SALES! A customer for AMERglas replaceable air filters is not a one-time customer, he is a customer two-to-tbree times each year. And when he comes in or calls for filters you have the perfect opportunity to sell other products, other services.

BIG VOLUME! There is an enormous and growing market for AMER-glas filters right in your own back yard. Over 4 million forcedair furnaces are already installed... and 4 out of every 5 warm air furnaces now going into homes are forced-air units. Are you getting your share of their filter business?

An Engineered product of American Air Filter

AMER-IIIAS FILTERS •

The HOSPITAL-WHITE Filter

TO MAKE MONEY WITH AMER-ULA

AMERICAN AIR FILTER CO., INC. 355 CENTRAL AVE., LOUISVILLE 8, KY.

Please send me complete information on AMER-glas Replaceable Air Filters. Show me proof of the profits I

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131

THE

14

## INDEPENDENT

"Fabrikated" WALL GRILLES for Commercial Installations

## PROVIDE ADJUSTABLE DIRECTED AIR FLOW



UP OR DOWN

RIGHT OR LEFT



311-A

## Made to fit openings in even inches from 8" x 4" to 60" x 40"



THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET - CLEVELAND, OHIO

### Coupon on page 119

#### Lightweight Electrode Holder

A NEW 300 AMPERE electrode holder has been introduced by TWECO PRODUCTS CO, Wichita, Kans. It features a lightweight, high copper alloy for maximum conductivity. Raised upper level allows plenty of room for an operator's hand with a welding rod in the jaws. Body and tip ends of the holder are insulated with patented insulators. Tip-end insulators are interchangeable.



The holder will handle from 7/32 in, through 1/16 in, electrodes. The welding cable may be soldered or clamped mechanically to the body of the holder. Only 91/4 in, long, the holder makes it easy for an operator to weld in hard to get at places. It is especially designed for high speed production and job shop work. AA 17

#### **New Oil-Fired Heating Units**

Two ALL-NEW OIL-FIRED, space-saving heating units are now being produced by The Heil Co., Milwaukee, Wis. Known as the Model UF-1 Highboy and Model AF-1 Lowboy, (illustrated), each of these completely factory assembled package units, with 80,000 Btu bonnet output, features the revolutionary new Heil Quin-Rad Heat Exchanger. As the name implies, the Quin-Rad has 5 baffled



flue passages, located above a tapered-top cylindrical heat exchanger. Each model also has side panels of 20-gauge, stretcher-leveled steel for rigidity and smooth-skin appearance. Both units feature an insulating type combustion



• PRODUCTS CLASSIFIED

TRADE NAMES

MANUFACTURERS, ADDRESSES

of Complete Product Information
... Are You Finding It Useful?

If you are like the average subscriber,\* you have near at hand—and frequently use—the January 1952 Directory Number of American Artisan . . . . the field's complete reference guide to the products which dealers and contractors specify and purchase for the residential air conditioning, warm air heating, and sheet metal work they handle.

Each January you get a new, up-to-date American Artisan Directory Edition. It's a part of your annual subscription to our publication.

Soon we will be starting to compile the January 1953 Directory Number. Have you any suggestions for making the 1953 edition more valuable?
... suggestions which we as publishers might adopt, or which we can pass along to the many manufacturers who co-operate with us by furnishing complete data on their products in each January Edition?

Your comments are sincerely welcomed.

\*Over 90% of those American Artison subscribers, answering a recent survey, stated that they find the current (1952) Directory Edition helpful in their work.

FIRST in Editorial . in Paid Circulation . in Advertising



chamber, for a cleaner burning flame and greater heat retention. Both of the new models are furnished complete with controls.

The UF-1 Highboy, which occupies a space of only a little over 2 ft square, is so designed that all service-able parts are accessible from the front. The AF-1 Low-boy occupies a space of less than 2 ft x 4 ft and is also easily serviced.

AA 18

#### Vaporizing Oll Burners

FULLY AUTOMATIC HEATING for the small house is provided by a complete new line of vaporizing oil burner wall and floor furnaces produced by Iron Fireman Manufacturing Co, Cleveland.

Outstanding feature is the electric ignition system which provides easy control over combustion without need of a pilot light.



Floor and wall furnaces equipped with the igniter come in models suitable for shallow pit, basement, or wall installations. All have forced draft retort, designed to give the most efficient combustion. Motors have permanently lubricated bearings. Heavier than average metals are stated to assure long, trouble free life.

Wall furnaces have been approved for zero clearance; they may be set safely against wood. Capacities of the new models range from 50,000 to 85,000 Btu. Furnaces have provision for cold air return; some may be installed with ducts to carry warm air to remote rooms or to second floors. Some models use forced air curculation. Conversion burners, also equipped with the automatic electric igniter, are included.

AA 19

#### **Home Type Window Fans**

MURRAY Co., Dallas, Texas, has designed two new window fans for home cooling, a 20 in., two-speed, direct drive model, and a 24 in. belt driven model.

Whisper quiet operation, no draft ventilation and easy installation are important features. The fans are finished in a high gloss white enamel with chrome trim. They are



We offer this new product to the appliance industry with pride and confidence. Combining utmost dependability, simplicity of construction and easy accessibility for servicing without removal from line, this new "T" Series is greater in capacity. For example, the ½" size now in production has a capacity of 118,400 B.T.U./hr. on natural gas and measures only 3-9/16" in width. The "T" Series will be available in sizes ranging from ¾" to 1½", all with A.G.A. certification.

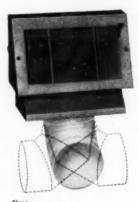
The unusual octagonal shape permits positive sealing of diaphragm regulator body. Wire, write or telephone for full data and quantity prices.



800 East 108th Street

COMPANY

"20 years' experience in building gas centrals"



OUT-O-WALL Special
10x6 — 4" or 5" pipe size
12x6 — 6" or 7" pipe size

## **OUT-O-WALL**

Trade Mark Registered
United States Patent Office
The New "OUT-O-WALL" Special

- \* Saves YOU money
  No boots needed. Head and boot combined in one piece.
- ★ Saves YOU time
  When register is set you're ready to run pipe in any direction.
- ★ More efficient

  New three-way grille designed specifically for Perimeter and High Velocity heating installations.

Write for further information. We manufacture a complete line of gravity, floor, and air conditioning registers.

The No. 45 Perimeter Diffuser for floor or toe-space installation is a good companion in the Rock Island Line.

ROCK ISLAND REGISTER COMPANY Rock Island, Illinois

## Manufacturers' Agents

Are you interested in securing additional lines?

We are occasionally asked by our manufacturer advertisers to suggest the names of manufacturers' agents in various sections of the country whom they can contact in regard to representation of their warm air heating, residential air conditioning and sheet metal products.

If you would like your name listed on our records for inquiries we may receive on your territory, we invite you to write us. There is no charge in connection with this service.

## AMERICAN ARTISAN

6 N. Michigan Ave.

Chicago 2, Ill.



"Quick Lock" round pipe is another improvement by Ohio Valley. "Quick Lock" pipe is perfectly smooth on the outside, cannot expand or collapse, has no raw edges—just insert tongue on one edge into fold on opposite edge (Fig. 1) and push until it snaps (Fig. 2). No hammers or tools needed.

Ohio Valley "Quick Lock" Pipe is put together quickly and easily on the job. It can be cut at time of installation to any length.

DO IT BETTER, FASTER— WITH OHIO VALLEY "QUICK LOCK"

Carried in Stock by Leading Wholesalers



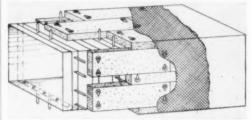
Ohio Valley Hardware & Roofing Company METAL MANUFACTURING DIVISION, EVANSVILLE, IND.

## Coupon on page 119

light weight and portable yet sturdy and strong, have a fine mesh metal guard, lifetime ball bearings, and are easily accessible for cleaning and dusting. AA 20

#### Insulation Fasteners

ALL TYPES OF INSULATION materials are applied quickly, economically and permanently to ducts, tanks and flat walls with a new metal strapping developed by A. J. Gerrard & Co., Melrose Park, III.



The strapping is 3/4 in. wide. 1/4 in. tapered fingers are spaced at intervals of 5 to 12 in. as specified, and serve to secure the insulation. It is applied around tanks or ducts with a steelbinder strapping tool. It can also be nailed or screwed to a wall or other flat surface. Once fastened, the steel fingers are lifted outward to a 90° angle and the insulation impaled on them. A slit finger strap washer is then slipped on the finger tip protruding through the insulation, and the protruding tip is bent firmly back against the washer. The whole operation requires only a few seconds.

It is available in plain steel, galvanized, stainless 430, or monel. The fingers are from 13% in. to 4½ in. long as specified. They are easily raised to impaling position yet are amazingly rigid. A 5/32 in. hole adjacent to each finger permits fastening to flat surfaces with nails or screws.

AA 21

#### Kit for Repair of Oxy-Acetylene Hoses

GAS ARC SUPPLY, Philadelphia, Pa., has introduced a fast-fix kit for repair of cutting and welding hose. It is complete with all necessary tools and replacement parts for 1) putting a new nipple ferrule nut assembly on the end of a hose. 2) permanently splicing hose, 3) temporarily coupling two sections of hose. No make shift repairs, the finished work is equal to the original equipment. The great advantage is that repairs can be made at the point of trouble without the delay of taking hose back to the shop for repairs.

The kit is packaged in a heavy gauge, tinned steel compartmented box with complete instructions. Repair parts—for ½ in. or 3/16 in. oxygen or acetylene hose—include nipples, nuts, and ferrules; double ended splicing nipples; and threaded coupling sections. All nuts, nipples and couplers are solid brass, while ferrules are either brass or aluminum. Also included in the kit are two hose ferrule crimping tools, one for ½ in. ID hose and one for 3/16 in. ID hose.

they fit your production procedure smoothly

## HARDWARE FOR METAL APPLICATIONS





INTERNATIONAL HEATER COMPANY

UTICA, N.Y. DEPT. A-852

WESTERN OFFICE AND WAREHOUSE: 1933 WENTWORTH AVE., CHICAGO 16, ILL.



Better Products. Better Made ... for botter living

## NEW LITERATURE

Coupon on page 119

#### **Propeller Fan Heaters**

Catalog 1209, issued by the Airtherm Mfg. Co., St. Louis, presents a line of propeller fan unit heaters.

Diagrams are included to show arrangements for getting the most efficiency for areas of various shapes; tables and charts give capacities. Also included are photographs of both horizontal and vertical units illustrating a variety of applications.

AA 101

#### Glass Insulation

A 16-PAGE BOOKLET entitled Specifications for the Application of Foamglas, the Cellular Glass Insulation, in Low Temperature Space Installations (Minus 35 F to 50 F), has been published by the Pittsburgh Corning Corp.

The booklet contains information about many new application methods on ceilings, walls, floors, columns and beams. It lists finishes, adhesives, sealers, suggested thicknesses, paints and properties. The material is presented in an easy-to-read and follow fashion with a number of illustrative drawings.

AA 102

#### Die Catalog

FEDERAL MACHINERY Co., New York, has compiled a 32page standard die catalog to facilitate ordering of standard punches and dies of various types for hand, foot and power presses.

The catalog is complete with detailed diagrams, charts, tables and illustrations of typical machinery and equipment. Prices are shown alongside each item discussed. Also illustrated and described are punch adaptors, die adaptors and die shoes.

AA 103

#### **Forced Air Space Heaters**

A REVISED EDITION of a 12-page bulletin describing Counterflo heaters has been issued by Dravo Corp., Pittsburgh.

Principal addition to the bulletin, No. 523-B, is information concerning use of the heaters for eight other applications besides space heating. These are functional heating, process drying, temporary heating, medium temperature drying, tempering make-up air, drying vehicles after washing, crop drying, and integration with air conditioning systems.

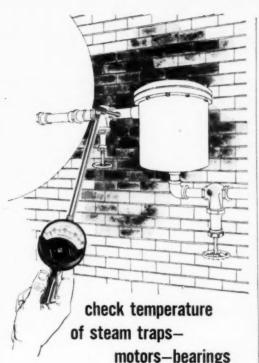
AA 104

## Portable Anemometer

HASTINGS INSTRUMENT, Co., INC., Hampton, Va., has issued a circular and price list covering their portable anemometer and accessories.

This instrument is capable of giving instantaneous direct readings of air velocities as low as 5 fpm and up to velocities of 6,000 fpm. It operates from temperature differences rather than from direct temperature measurements, thereby eliminating effects of ambient temperature and static pressure. The lag of the instrument is less than one second.

AA 105



. . . quickly and accurately with the Alnor Pyrocon, the portable contact pyrometer for taking surface temperatures. This handy, portable instrument can be your most useful maintenance and installation tool ... it provides accurate temperature readings instantly of any surface (metallic or nonmetallic), flat, curved, stationary or revolving.

It's a well-balanced instrument mounted in a sturdy case for protection against the usual hazards of on-the-job service. Jeweled movement is also heavy-duty, shockresistant type that will withstand hard and continuous use . . . performing with laboratory accuracy.

A wide selection of thermocouples and extension arms assures its adaptation to your needs. Eight standard F. scale ranges are available up to 1200°F. Send for complete details contained in Bulletin 4257. Illinois Testing Laboratories, Inc., Rm. 538, 420 N. LaSalle St., Chicago 10, III.

Alnor

PRECISION INSTRUMENTS FOR EVERY INDUSTRY

# Brundage

## BLOWER ASSEMBLIES

unequalled in performance efficiency quality

USED AS STANDARD FOUIPMENT BY MANY LEADING FURNACE BUILDERS



A standard type and size for every hi-boy, low-boy, counter-flow and horizontal furnace of 40,000 to 200,000 Btu/hr rating at bonnet temperature rise up to 100°F. Designed and built for PEAK EFFICIENCY and DEPENDABLE PER-FORMANCE. Has these unmatched features . . . Duomultiblade wheel, statically and dynamically balanced. . . Heavy-gauge cold-rolled steel wheel for maximum efficiency. . . One-piece bridge-type motor mount. . . Selfaligning shock-resistant bearings. . . Four-point bearing suspension. . . One-piece bearing assembly.

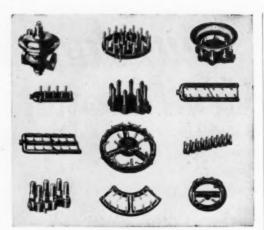


## BLOWER-**FILTER UNITS**

None better for any warm-air heating plant, or for cooling. ventilating and airconditioning systems. You can depend on BRUNDAGE Quality and Performance. . Customer satisfac-MORE PROFITI

SOUND ENGINEERING AND QUALITY ARE BRUNDAGE TRADITIONS

Please sand me free literatur	e on Brundage	Blower-Filter
Package Units and Series "X" Blo	ower Assemblies.	
Name Company		
Address		
City	State	
	@/	CO . 1. A
Rrundage	Dioteet .	Specialists
Dunung		1919
COMPANY		Park St. 11, Mich.



## BARBER

Has Long Been *'Burner Headquarters''* for Gas Appliance Makers

Every phase of burner application has been thoroughly studied by Barber experts, in 30 years of service to the appliance industry. Since the real key to appliance performance is the burner itself, every care must be taken to see that the entire design — size, shape, capacity, type of jets, and all other features — are correct for the purpose and the type of gas to be used. Only competent engineers, conscientious inspectors and testers, and skilled craftsmen can do this. As a result, Barber has become the first name in burners, and the adoption of these units has proved a basic principle of good design in the appliance

We are prepared to help you solve any burner problem, for any kind of gas. Particularly for industrial or commercial applications, where gas is used in processing the product made or handled, and where difficult or unusual problems confront the gas equipment installer - Barber can be of definite assistance. Nothing better can be said of any appliance than: "It's equipped with a Barber Burner."

Ask for complete Catalog No. 110 showing scores of typical units—also Conversion Burners and Controls.

### THE BARBER GAS BURNER CO.

3708 Superior Avenue

Cleveland 14, Ohio

## Coupon on page 119

#### Oil Burning Furnaces

HORIZONTAL OIL BURNING FURNACES are described and illustrated in two mailing inserts recently issued by the Besser Metal Products Corp., Charlotte, N. C.

Designed principally for underfloor installation, these furnaces are also adaptable for overhead suspension in garages and shops. They are shipped completely assembled and wired with controls.

The folders are illustrated with diagrams of typical installations, also include specifications and dimensional

#### Air Filter Promotion

A 6-PAGE FOLDER describes a promotional program for air filters planned by Owens-Corning Fiberglas Corp., Toledo, which will tie in with Arthur Godfrey's television and radio programs scheduled to start this September.

Included in the promotional material are store displays consisting of window posters, 3-dimensional stand pieces and store banners, and a variety of mailing pieces such as booklets, stuffers, catalogs and post cards. AA 107

#### Industrial Nozzle Bulletin

BINKS MFG, Co., Chicago, has prepared a 40-page bulletin describing industrial spray nozzles for a broad range of commercial and industrial processes.

Data given include nozzle dimensions, capacities and spray angles. All nozzles are illustrated and in many cases cutaway drawings showing the construction and operation of the nozzle are included. Blueprint drawings show proper installation details where this information is required.

A handy index lists 29 different applications with page references for each so that full information for any specific process can be quickly located.

#### Register & Grille Price List

PRICE LISTS EFFECTIVE APRIL 1, 1952 covering air conditioning registers and grilles have been issued by Rock Island Register Co., Rock Island, Ill. Also available is a trade discount sheet covering air conditioning registers, baseboard and floor registers and faces, and furnace pipe and fittings.

#### **Central Control Panels**

BULLETIN F 5265, prepared by Barber-Colman Co., Rockford. Ill., outlines a technique for use in designing economical automatic electric control installations for heating and air conditioning systems.

The central control panel with numbered terminal strips acts as a nerve center for all components of the control system. It is assembled to meet job requirements, houses all electrical accessories, and provides a junction point from which a separate conduit with coded wires leads to each motor operator.

Only thoroughly understood electrical installation pro-AA 110 cedures are required.

# Multi-Drive Power Table:

FURNACE - COLLAR DGING ND A MULTITUDE OF THER SHEET METAL

. MORE PRODUCTION WITH POWER

Low cost hand operated bench machines are instantly converted to power machines that will give many times the output per hour for each machine.

. REES BOTH HANDS FOR WORL

The electric foot treadle controls the operation of the rolls, freeing the operator's arms so that both hands can guide the work.

ELIMINATES "TOOL HUNTING" MAG
 "YOUR SETTING"

We recommend that each position be setup for a certain operation so the operator can start to WORK immediately without wasting time hunting tools, rolls and gages.

- BOTHABLE COMPACT
- "unymores volle poessur Michill

Write Im New Bulletin's

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y. America's Most Complete Line Presses, Shears, Machines and Tools for Sheet Metal Work DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK



## No Ductwork . . . No Electricity . . . No Chimneys Required!



#### **Permanently Sealed Outside Venting** Provides All These Exclusive Advantages

- · Easier, Faster Installation Between Wall Studs-On Outside Wall Where Good Heating Belongs
- · No Chimneys, Electricity, Ductwork Needed
- Savings on Fuel Costs Up to 20%
- Elimination of Utility Room -- Valuable Savings in Basement, Floor and Closet Space
- · Zone-Controlled Comfort, Individual Thermostat Permits Room-to-Room Adjustment of Heating Flaw
- · Positive Seal of All Combustion Products from Heated Room Air
- No Moving Parts to Maintain or Replace

Saf-Aire Model 991-14, 14,000 BTU/HR, 18" x 24" x 4"
Other convector and forced air models 20,000-35,000 BTU

Approved by American Gas Association



Room-size "Safety-Sealed" units burn gas in a patented sealed chamber ... vent all combustion products outside after use...eliminate the need for chimneys, electricity, ductwork of any sort!

You save money on (1) Job-Time, through faster, easier installation in any exterior wall; (2) Materials, for only one utility connection is needed-the gas line; (3) Repairs, which are practically non-existent since there are no moving parts to maintain or replace.

Ideal for remodeling, home building, auxiliary heating installations, "Safety-Sealed" units provide clean, safe, trouble-free heating comfort. Answer the needs of hundreds of prospects right in your community. Use them. Recommend them!



STEWART-WARNER CORPORATION . South Wind Division 1514 Drover St., Indianapolis 7, Indiana

WRITE NOW for complete, free information and specifications on the complete line of Stewart-Warmer "Safety-Sealed" Gas Heating Systems. Select dealerships are available in some territories. Address inquiries to Dept. B-83. 1514 Drover Street, Indianapolis 7, Indiana.

## Washington Letter -

(From page 30)

expected Eisenhower will be particularly friendly to farmers, and to their claims of need for various kinds of support. He is expected to continue the present system of rural electrification. They tell us he is not in favor of inflation, but would probably approve some measure of deflation. He will undoubtedly enforce the Taft-Hartley Act. Unquestionably he will continue the support of the social security program. Those who are supporting him believe that he will try to cut down the army of Government workers. Curiously enough, his backers expect him to reduce military spending moderately, and spending for foreign aid. He considers such steps necessary in order to bring about reduction in taxes, these reductions to be shared by the upper levels as well as the lower. Bankers expect he will encourage interest rates to rise. He doesn't believe in socialized medicine.

He is expected to continue to support subsidized lowcost housing. They tell us the Army will probably be the fair-haired child in the Services, and the Navy will get more sympathy, but the Air Force is not expected to do so well. We know that he approves of our present program and plans in Europe and in Asia. If there is a slump, it is expected Eisenhower would use every power of Government to arrest the decline of business. That means sharp tax reduction. pump-priming, public works and the encouragement of large-scale lending by private persons under the Government guarantee. Eisenhower's need will be to learn the art of dealing smoothly with the public. He has shown no such skill up to the time of the Democratic convention. It may be significant that he is expected to change the present system of press relations in the White House by requiring that all questions be submitted several hours before the press conference. This would follow the custom of Hoover, who would not answer any question unless it was previously submitted in writing. It is believed that a Republican Congress could more nearly, if it wished, control the administration of governmental activities.

## Special Membership Offer by National Warm Air Heating Association

HEATING DEALERS and contractors can now take advantage of a special membership offer being made by the National Warm Air Heating and Air Conditioning Association, whose Board of Trustees have recently adopted a plan whereby a new member can pay \$15.00 and have his dues paid up for the rest of this year and all of next year.

Some of the advantages of being a member are the 40 per cent discount from the list prices of the manuals and worksheets; the information contained in the bulletins and special articles frequently sent members, keeping them up to date on developments in the warm air heating field; the use of decals and electros for identifying companies as members of this association, and the membership certificate.

BANISH
WET CHIMNEY
TROUBLES
IN GAS-FIRED HEATING PLANTS
WITH quickdraft

When fuel gas is burned, a substantial volume of the hydrogen content combines with oxygen from the air to form water—which heat from the fire converts into vapor.

When this vapor comes in contact with cold chimney walls, it condenses into drops of water which run down the chimney and often find their way through mortar joints, causing damp walls quickdraft dries up chimneys by injecting a sufficient volume of air to lower the dew-point from 175° F. to 88° F. and blow both vapor and combustion gases out the chimney. Controlled by a thermostatic switch in the smoke-pipe, quickdraft operates as long as the fire is burning yet does not "build up" the draft when natural draft is functioning normally, quickdraft is especially effective where chimneys are poorly constructed and where bends or elbows in chimney or smoke-pipe retard natural draft. It frequently eliminates need for liners in old chimneys.

quickdraft is reasonably priced, quickly and easily installed, uses no more current than a small light bulb. It is simple, fool-proof, durable . . . vitreous enamel units will not rust or wear out. Does not restrict smoke-pipe opening, even in event of current failure.

Use quickdraft to dry up chimneys and correct draft problems caused by low, detective or inefficient chimneys. Figure it in new installations or conversions, too, to assure satisfaction. Write for bulletin.





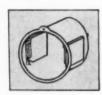
ROLLING TYPE HINGE PIN means no friction, no binding, no need for oiling, no fear of corrosion. Off-Center Gate Mounting lets draft operate on a greater effective area.





EXTENDED HOUSING

places gate well outside the flow of fouling soot and gases. Warping or binding of gate are eliminated assuring full sensitivity.



SIDE WINGS mean greater accuracy as they allow the area of the opening through the control to increase uniformly. Gate is shaped to lit closely to wings.

# unless it's a field someone's been fooled

- 1. Made of Heavy Materials -Longer Lasting.
- 2. Balanced at Factory More Accuracy.
- 3. Quickly Responsive Saves Fuel.
- 4. Rocker Type Fulcrum -
- 5. No Warping, Clogging No Service Calls.
- 6. Free Smoke Passage No Sooting Up.

The Draft Control that's nationally advertised in BETTER HOMES & GARDENS



Field DIVISION

CONCO BUILDING PRODUCTS, INC.
BRICK - TILE - STONE
CONCO MATERIALS HANDLING DIV.

## INDUSTRY ITEMS

T. REID MACKIN, who has headed the Chicago office of International Heater Co., Utica, N. Y., for the last 35 years, announces that Reid, Jr. entered the employ of the International Heater Co. on June 9 as a salesman trainee. Young Reid graduated from St. Joseph College at Collinsville, Ind., where he majored in business administration. He will stay in the Chicago office until he is called into the Armed Services.



T. Reid Mackin, Jr.

Jay E. Rhodemyre

Mr. Mackin also announces that Jay E. Rhodemyre entered the employ of the International Heater Co. earlier this year, as a salesman calling on the trade in the city of Chicago. He graduated from the University of Kentucky as a mechanical engineer, spent four years in the army and played professional football with the Green Bay Packers for two seasons before joining with International.

The Air Conditioning Equipment Co. of Omaha, Nebr., has received its franchise as distributor of Carrier Corp. equipment for the territory of Nebraska and Western Iowa.

J. W. Hennen, president of Air Conditioning Equipment Co., met recently with G. T. O'Maley of the Carrier Kansas City district to plan channels of distribution and selection of dealers in the newly franchised area.



J. W. Hennen, president, Air Conditioning Equipment Co., greets G. T. O'Maley of Carrier Corp.'s Kansas City district

More than 100,000 architects, heating and ventilating engineers, school and hospital administrators, contractors, railroad operating technicians and other industry

# SEND FOR YOUR COPY TODAY ...

A complete reprint, under one cover, of Professor S. Konzo's invaluable series of articles —

The

## "How, What And Why"

of the New

# Winter Air Conditioning Manual

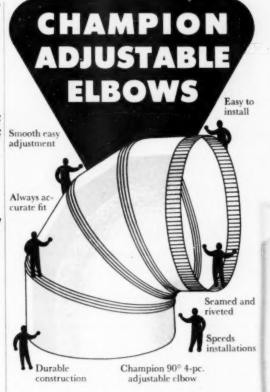
Everyone who is now using or expects to use the new "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems" will find Professor Konzo's series a source of much practical help in understanding the Code and correctly applying it to actual jobs. In this great series, Professor Konzo not only explains step by step exactly how to use the Code, but, in addition, tells in detail of the research and experience that is behind each step in the suggested procedures.

Price — Only \$1.00 per copy

## AMERICAN ARTISAN

6 NORTH MICHIGAN AVE.

CHICAGO 2, ILLINOIS



Champion's 90° 4-pc. adjustable elbow and 45° 2-pc. angle will speed installation for you every time. They're extra strong and — most important — have a smooth, easy adjustment, but do not come apart. 3" to 24" diameters, 24-26-28-30 gauge. Like all Champion units, they always fit perfectly. Try them!

## CATALOG SUPPLEMENT AVAILABLE

Write for new folder describing Champion pipe and fittings for perimeter and small pipe systems.

## CHAMPION

CHAMPION FURNACE PIPE COMPANY
211 Eaton Street Peoria, Illinois



## Automatic Gas Unit Heaters are engineered for efficiency planners

Buyers of facilities today must use equipment engineered to provide maximum utility and flexibility . . . functional efficiency. Reznor dealers have the unit heater specifically fitted to modern requirements. Reznor is the top quality unit. Best possible heating is provided with advantages of fast, out-of-the-way installation, fully automatic controls, economical operation and long, trouble-free performance.

If you are a Reznor dealer use your advantage in the contemporary market. If you desire a Reznor dealership, write for details.

#### MECHANIZED HEATING

A completely automatic, packaged unit in sizes from 25,000 to 200,000 BTU. Installed singly or in multiples as required. High efficiency due to balanced engineering of heat production, air movement and controls. Both floor and suspended models available



State

#### REZNOR MANUFACTURING CO.

40 UNION ST. MERCER, PENNA.

Send me 20-page catalog in full color

Name. Firm. Address. Zone of Progress during the 19 months the caravan of automatic control devices was on the road, according to a report recently released.

representatives viewed Minneapolis-Honeywell's Parade

The exhibit covered 24,587 miles, visiting 62 U.S. cities and 10 in Canada. The average stop in each city was from two to five days. More than 500 of the company's engineers participated in the local showings of the exhibit.

W. J. SMITH, SR., president of Cleveland Steel Products Corp., has announced the election by the board of directors of Robert J. Lucas to the post of vice president. Mr. Lucas will be in charge of the company's Toridheet Division which manufactures automatic heating equipment for residential and commercial installations.

Lucas, 34, has been with Cleveland Steel for seven years. Prior to the war he was associated with the Ferbert Schorndorfer Co., also of Cleveland.





Richard F. Heaven

THATCHER FURNACE COMPANY, Garwood, N. J. announces the appointment of Richard E. Heaven as sales representative in the Washington-Baltimore area. He formerly represented Thatcher in Virginia and the Carolinas, and has returned to civilian life after an extended tour of duty in the United States Air Force.

FOUR NEW MANUFACTURERS' REPRESENTATIVES have been appointed by Farr Company, Los Angeles, manufacturers of Far-Air filters, it was announced recently by J. D. McCampbell, sales manager.

The new appointments: Donald Southard, Denver, who will cover the Colorado and Wyoming territory; F. W. Jenike Co., Cincinnati, for the Cincinnati trading area and the state of Kentucky; The Charlie Wood Co., Columbus, Ohio, representing Farr in Columbus, Dayton, Mansfield and Coshocton trading areas; and The William M. Shank Co., Indianapolis, in southern Indiana. THE ZONOLITE COMPANY, Chicago, producer of vermiculite, is building a research program at its newly-completed laboratory in Evanston, Ill.

Finding new industrial uses for this mica-like material is the goal of the program headed by Dr. George Ziegler, research director. With a staff of 14, he is to carry out basic research in chemistry, physics, and engineering. Vermiculite is known mainly as a light weight plaster and concrete aggregate and as a home insulation.

J. M. Johns, for several years manager of industrial sales for Libbey-Owens-Ford Glass Company, Toledo. has assumed his new duties as general manager of the

City.



If you are using or contemplating the use of heatresisting steels for combustion chambers for oil burner furnaces, we are specialists in producing these types of steels.

Whether you are a large or small user of these steels, our steel making facilities can offer exceptional service by especially shearing to your specified combustion chamber steel blanks, or multiples thereof.

More quiet burner operation
 Cleaner heat
 Better temperature control
 Considerable savings

on fuel costs



## Ingersoll STEEL DIVISION

PORG.WARNER CORPORATION

310 South Michigan Avenue, Chicago 4, Illinois Plant: New Castle, Indiana



easy installation : : positive control

# PARKER-KALON Unxld DAMPER QUADRANT

Specified by architects, endorsed by heating and ventilating engineers and preferred by sheet metal contractors, the "UNXLD" Quadrant has been recognized for over 30 years as "the sign of a quality job". The "UNXLD" provides positive damper control. The wing nut locks the setting, yet permits rapid readjustment. Clear markings on frame show exact position of damper. Easily and quickly attached to round or flat surfaces, it makes a neat installation. Frame is heavy-gauge steel or brass; lever is malleable iron or cast brass. Available in \$\frac{3}{2}\$ and \$\frac{1}{2}\$ a sizes for dampers up to 30 inches.

Also available from your P-K\* Distributor...the "JIFFY" regulator of simple design for low cost units, and the popular leakproof, rattleproof "DIAL" Regulator.

Remember-IF IT'S P-K ... IT'S O.K.

## PARKER-KALON DAMPER CONTROLS

Makers of the Original Self-tapping Screws



Write for this folder

Describes all types and sizes of P-K Damper Controls. Tells why leading contractors everywhere prefer them. Parker-Kolon Corporation, 200 Varick Street, New York 14, N. Y.

STRADE MARKS REG. U.S. PAT. OFF.

# HOT WATER from WARM AIR!

The Aquadir UNIT IS CREATING A SENSATIONAL DEMAND because

It produces hot water Summer and Winter from the home heating furnace—saving its user as much as \$150.00 on his hot water bill. Eliminates for all time the separate costly independent hot water heating unit.

The Aquadir UNIT is so compactly built that it can be attached quickly and economically to virtually all warm or hot air heating furnaces of any make. The owner may get back the entire cost of the unit and installation on what he saves on his hot water bill in one year.

The Aqua-air UNIT ends many of the other drawbacks of warm air heating such as those in heating kitchens, bathrooms, garages, exposed sun porches, etc.

FOR WARM OR HOT AIR
HEATING SYSTEMS, THE
AQUICUT CORPORATION
BRINGS YOU THE

Aguarir UNIT.

FOR THE FIRST TIME EMPLOYS THE AIR FROM THE HOME HEATING FURNACE TO MAKE HOT WATER.



For full information about the Aqua-air hot water generating unit, write today to Aqua-air CORPORATION, Department 18.

Some exclusive franchises still available.

AQUILIT CORP

new Fiber Glass Division, it was announced by G. P. MacNichol, Jr., vice president. Johns will be responsible for the general direction of the division including sales, production, research and development. Original announcement of Johns' appointment was made in January, but he has been on leave since then attending the accelerated course in advanced management at the graduate school of business administration at Harvard University.

Promotion of two sales department members was re-

PROMOTION OF TWO sales department members was recently announced by Thomas Hancock, vice president of The Trane Company, La Crosse, Wis., manufacturers of heating and air conditioning equipment.

C. R. Conner has been appointed general sales department assistant in charge of jobber sales. R. S. Knowles will handle gas unit heater sales, in addition to his regular duty as manager of hot water specialties sales. An enlarged sales program on gas units will be ready for announcement in the near future, according to Knowles. HARVEY-WHIPPLE, INC., Springfield, Mass., manufacturers of Master Kraft oil heating equipment, announce the appointment of LeRoy O. Gough, Bangor, Mich., as factory representative for both the lower and upper peninsulas of Michigan. Gough comes to Harvey-Whipple from the DeLaval Company, Detroit, and has been covering Michigan for the past eight years. He is well acquainted with the territory and with heating dealers in that area.



LeRoy O. Gough



George Day

GEORGE DAY has been appointed assistant sales manager, Heating Division, Richmond Radiator Company, New York, manufacturers of gas-fired warm air units.

Long active in the Metropolitan New York and New England area, Day was associated with a Chrysler-Air Temp distributor and prior to World Was II in which he spent 3½ years in the A.A.F. was with the Dole Valve distributor in New England.

LINDBERG ENGINEERING COMPANY, Chicago, manufacturers of a variety of industrial products and heating equipment have announced an increase of their manufacturing facilities.

With the opening of Lindberg Plant No. 2, additional 6200 sq ft of production space are now available to attack a backlog created by a large acceptance of Lindberg equipment during the past six months.

Lindberg Plant No. 2 will manufacture laboratory furnaces, small induction heating units, Fisher type melting furnaces and atmosphere generators, thereby reliev-

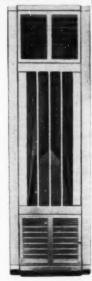


## WALL HEATERS

A better designed gas burning unit for home heating —



LOUVER
OR
RADIANT
types



AGA Approved for Natural, Manufactured Mixed or LPG.

- \* ATTRACTIVE Easy to sell
- \* DESIGNED RIGHT
  - More heat per dollar
- ★ EASY TO INSTALL in new or remodeling jobs

John Zink's newest improved W25 Wall Heater has 25,000 B.T.U. input rating. Simplified installation requirements make them ideal units for use in small homes, extra rooms, garages, utility rooms and basements. Ideal for modernizing old homes as well as in new construction. Only 57½ inches high and installs between 16 inch centers.

Can be furnished with 100% safety pilot or with standard blue flame pilot on natural gas.

Be Profit Wise — Show and Sell John Zink Heaters.

— Write —

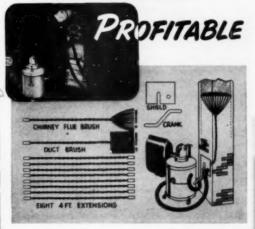
## JOHN ZINK CO.

4401 So. Peoria

TULSA, OKLA.

## Here's the **Equipment** to

## MAKE FURNACE CLEANING



Available for Immediate Delivery

Put this modern, efficient, powerful G-E system on the job—and see how fast and efficiently you get through those furnace cleaning calls.

And your G-E dealer can get this equipment to you in a hurry—in plenty of time to take care of your customers while their heating plants are still shut down. Add the duct- and chimney-cleaning accessories so you can do the whole business at one time, Your customers will be glad to have the messy job handled so cleanly, so quickly, and so thoroughly.

G-E is the portable AC-DC unit that weighs only 51 pounds. Yet it packs in a full one-horse power vacuum blower unit. Nozzles and extension tubes are designed to reach easily all parts of furnaces and boilers.

## MAKE GOOD USE OF THIS WARM WEATHER

Get your G-E Furnace Cleaner to work quick.
Call your G-E dealer, or mail the coupon...hurry!

## Furnace and Boiler Cleaners GENERAL & ELECTRIC

GENERAL ELECTRIC 1285 Boston Ave., Bridg	CO	MPA!	NY, De	pt. 2	2-412	8	
Certainly, I'm interested Equipment. Send deatils.	in	more	efficier	t Fu	rnace	Cle	aning
NAME							
FIRM							
ADDRESS							
CITY		ZO	NE	STA	TE.	-	

ing the main plant to speed up production of large industrial heat treating furnaces.

FIFTY WARM-AIR HEATING DEALERS attended a meeting held recently by Marburger Supply Company, Peru, Ind., to discuss products and merchandising plans offered by Armstrong Furnace Company.

A discussion of Armstrong products was held by H. G. Hays, assistant sales manager of Armstrong's Columbus factory, and H. C. Galleher, Armstrong advertising manager, with the emphasis being placed on furnaces recently produced by Armstrong to fit needs brought about by current housing trends. Hays also led discussions on gas and oil furnace controls, installation problems and service.

Merchandising was the theme of the evening session, with Armstrong's national advertising, special selling campaigns and sales presentation book being discussed by Hays and Galleher, with C. L. Brooks, Armstrong district manager, explaining the various items which Armstrong makes available for dealer identification.

Milton Bishop, Marburger Supply Company heating manager, pointed out features of his company's service to heating men. He mentioned especially the availability of a complete selection of Armstrong units, and urged dealers to take advantage of the merchandising assistance being offered by Armstrong.

ONE OF THE EXHIBITS at the recent Brussels International Trade Fair was that of the SOCMA Heating Co. of Brussels.

sels. The exhibit prominently displayed Williams Oil-O-Matic equipment.

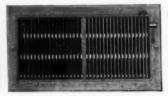


Williams Oil-O-Matic Units Displayed at International Trade Fair, Brussels

A MODEL HOME built by a Greenwich, Conn., contractor recently served as a showcase for Servel's gas operated all-year home air conditioner.

About 1,000 persons toured the home during the opening week-end. Success of the promotion was pointed

## A Complete Line for all Your Needs



No. 4432 register with flexible fins and multi-louvre valve.

Here are some improved and now designs in Auer registers, both for air conditioning and fer perimeter systems. The Fig. DRP fabricated floor registers are ideal for perimeter jobs. They have adjustable cross bors. Fig. DRP 2½ x 14 has single valve, and Fig. DRP has multi-louvres which can be set for desired volume and direction and locked in place by a balancing adjustment device. Made in proper sizes for perimeter heating requirements, with intakes to match.

Write for new Auer Register Book 52 on al models, also Bulletin on perforated grilles



No. 7032 register with flexible fins







# Get those FALL

with FOLLANSREE SEAMLESS TERME





There are big profits to be made this Fall in weathersealing-especially when you use Follansbee Terne Metal. Because of its greater ductility, installation can be made more easily. The tightly bonded coating of teme will not flake or peel in the most difficult seaming operation.







Follansbee Terne Metal will bond with other metals without setting up any serious electrolytic action. And is available in 50 ft. rolls, without cross seams, that can be cut to any required length.

Follansbee Terne Metal is carried in stock nationally by all leading sheet metal distributors.

## FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

POLISHED BLUE SHEETS AND COILS . SEAMLESS TERME ROLL ROOPING COLD ROLLED STRIP



leveland, Detroit, Milwaukee, Sales Ageste—Chicago, ondianapolis, Kansas City, Nashville, Loe Angeles, San rancisco, Seattle; Toronto and Montreal, Canada. Milw-Follansbee, West Vignia

FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa. + Rochester, N.Y. + Fairfield, Conn

# Weathersealing Jobs NOW! mighty mite



## O-BLAST **ECONOMITE**

Averages 10% less in fuel consumption ·easy to install · safe in operation · no "pop" atstart and stop • easy to service • long-lived. Capacities from 70,000 to 500,000 BTU.

Economite power burner design means perfect combustion-fuel saved. It assures quiet operation, no combustion roar. Shipped to you completely assembled-equipped with every device for safe operation-factory tested on gas.

All parts are accessible-there's nothing in the fire box but the fire. Simplicity of design and durable construction, cuts service to a bare minimum.

When you see an Economite, you'll realize that here, indeed, is an utterly different and better gas burner.

## DEALERS!

Write today for full information on this outstanding gas burner. Nothing like it on the market—a sure profit



STANDARD LO-BLAST BURNER

Approved by leading utility companies and consulting engineers. Capacities to 20,000,000 BTU

## MID-CONTINENT

METAL PRODUCTS CO. 1960 N. Clybourn Ave., Chicago 14, Ill

## Raise Your Own Salary with a Super Red Streak

Start now! Clean heating plants the Super Way. Make more money easy, fast. Cleaning fees are only part of your profits. When you do the cleaning, repair and replacement jobs are revealed before competitors are called in. The powerful new Super Red Streak Model SH cleans all types of beating plants; provides both wet and dry pick-up. Cleans debris from flooded basements; cleans boiler tubes.

Super chimney cleaning tools are standard equipment. Operator cleans chimneys from the basement, not the dangerous roof.

#### · New Non-Clog Filter Bag ·

The new Supertex heavy duty suction cleaner filter bag is made of a special porous fabric with high resistance to clogging, and destructive action of acids and chemicals in coal and oil soot and other dusts. These form a fragile film on the inside surface of the Supertex bag. This film breaks down and falls, leaving the pores of the bag material unobstructed and the fabric undamaged.

Send for the FREE SUPER SALES PLAN BOOK, Ittells you how to build a profitable furnace cleaning business. Your whole-saler can give you complete data on the Super Red Streak Model SH. Or write us.

> Super Red Streak Model SH — The heavy duty cleaner that does everything.

Approved by Underwriters' Laboratories and Canadian Standards

NATIONAL SUPER SERVICE CO., INC. 1944 N. 13th St. Toledo 2, Ohio

Sales and Service in Principal Cities

In Canada: Plant Maintenance Equipment Co., Toronto and Vancouver



"Once Over Does It" SUPER SUCTION

THE DRAFT HORSE OF POWER SUCTION CLEANED

up by the sale of the model house and orders for 11 more homes with all-year air conditioners in a two-day period.

A. W. EDWARDS, a Westinghouse Electric Corporation engineer, has been awarded a Sloan Foundation Fellowship to study for a year at the MIT School of Business and Engineering Administration, Nominated by Westinghouse in connection with its Management Development Program, Edwards was one of 18 technical graduates chosen by the Foundation from a national field of 50.

The year's course will include three months of specialized instruction on such business administration subjects as economics, accounting, industrial relations, etc.



A. W. Edwards

MALBOURNE CLARKE has been appointed by Perfex Controls Limited to head sales in eastern and northern Ontario, with headquarters in the Toronto office.

Mr. Clarke was formerly assistant to the director of merchandising at Therm-O-Rite Products Limited, distributor for Chrysler Airtemp.

MAURICE RODERICK EASTIN has been appointed assistant manager of the control sales division, Perfex Corp., Milwaukee, Wis.

Mr. Eastin is an electrical engineer, is the author of several technical papers. He also holds a patent for electronic controls.





Maurice R. Eastin



William I. Gold

WILLIAM J. GOLD, who joined the Viking Air Conditioning Corp. as an assembler when the company was three years old, has been named assistant to the president. After working in various positions in the organization, Mr. Gold was made office manager in 1946, upon his return from army service. He will continue in that capacity in addition to assuming his new duties.

A MOVE TO LARGER, more modern quarters is announced by S. Laurence Ach, president, F. E. Winstel Company, Cincinnati distributors of heating equipment, parts and



## THE Complete DRIVE CLEATING MACHINE

Smith's Cleat Benders save wasted minutes that add up to hours . . . days . . . and weeks of needless effort . . .

To find out where you may be wasting valuable minutes—try this experiment;—TIME YOUR-SELF when making cleat edges on various widths of ducts up to 18" and gauges up to 20, with your present methods . . . Then TIME YOURSELF again by making the same folds on a flat piece of metal with a bar-folder. . . . the comparison will give you some ideas of what to expect with a SMITH'S CLEAT BENDER.

A Smith's Cleat Bender is essentially like a bar-folder in that a bend can be made and pinched down. . . . Unlike a bar-folder or any other bender, it is so constructed to allow entering square ducts of various widths to make the bend. . . . It is so constructed that it can be disengaged from the work, leaving the work in a horizontal position throughout the bending cycle. . . . This is important when cleat-edging long lengths.

√ Bends uniform cleat edges in less than 5 seconds!

Other methods take as much as a minute or more.

Makes perfect drive cleats in less than 8 seconds! Free of ripples and ready to use without the aid of a screw driver.

No money tied up in idle equipment . . . And no time wasting adjustments to make, fits any size duct up to width of bender and any thickness up to 20 Gauge.

No. 12 SMITH'S CLEAT BENDER (12" wide) \$42.00° No. 18 SMITH'S CLEAT BENDER (18" wide) \$66.00°

\*(Prices subject to change without notice)

F.O.B. WAUKEGAN, ILLINOIS

See Your Smith's Cleat Bender Distributor Now!

## R. E. SMITH

1806 Belvidere St. Waukegan, III.

## Horizontal Furnaces Make Profitable Installations

#### Help Builders Beat Rising Construction Costs and Make Money Doing It

Keeping the cost of new homes within the reach of potential buyers is a mejor problem today. Builders and contractors are meeting it in two ways: First, to beat the high cost of single lots, they are developing large tracts of land and building many homes at the same time. Second, they are eliminating every possible costly feature — basements, garages, even service rooms.

#### Whole New Field is Opening Up

This is opening up a whole new field of opportunity for the heating and sheet metal contractor—the sale and installation of underfloor central warm air heating systems. The "Besser Junior" makes central heat possible in even the lowest cost homes.



The Besser Herizontal Furnace Needs No Basement of Utility Room — Helps Cut Home Building Costs

Because of the great savings, more and more builders are turning to the new type horizontal, oil-burning furnaces. A central heating system adds value to any house, makes it easier to sell—is far superior and greatly preferred to e floor furnace. Builders recognize this fact, and that means business for you.

#### Here's Where Profits Are Made

Bidding on the big jobs is always competitive, so where do you come in? Here's the enswer: to start with, you've got something to sell—the answer to a builder's prayer—a way to put central heat into every house without the cost of a basement or utility room. That's a natural advantage.

Still, you may have to figure closely, so where's your profit? Right here! You know that service call-backs ere what eat up your profit. When you install a Besser Horizontal, service calls are fewer—because only the best goes into a Besser! Every part is fully guaranteed. Properly installed, it's virtually trouble-free. Call-backs will be few and far between.



Besser Plant Facilities Increased 50% to Meet Growing Domand

#### Double Sales Possibilities

Quiet, automatic Besser Horizontals are equally adaptable to under-floor home installations or overhead installation on commercial jobs where floor space is at a premium. One furnece gives you a double sales potential. Full range of sizes to meet every job need—large or small.

#### Wider Distribution Planned

Greatly expanded plant facilities make it possible to serve a larger area. Distributor franchisas and deelerships in certain areas offer e real opportunity for profit in a product you can sell with confidence. Inquiries from aggressive Manufacturer's Agents invited. For full information write: Besser Matal Products Corp., 754 Clement Ave., P. O., Sox 4064, Charlotte, N. C.

accessories. The new location, at 855 Poplar St., Cincinnati 14, will provide approximately 6,000 sq ft of floor space, permitting the firm to expand its stock of heating equipment, parts, and its service department.

AT A MEETING in New Haven, Conn., about 300 Oil Heat dealers listened to E. B. Glendenning, the inventor of the Shell Combustion Head, explain the development of the head and its application for higher efficiency and clean burning of modern fuel oil.

The toastmaster of the evening, Arnold Michelson, introduced Glendenning and the other guest speaker for the evening. Burt Watling, sales manager of the U. S. Oil Division, who gave the dealers a practical talk on the need for retail selling. He also gave valuable suggestions for their use in closing retail sales. The meeting was sponsored by the Oil Equipment Center of New Haven, under the direction of Mitchel Landau, sales manager.

HOWARD A. BLAIR has been appointed product manager of self-contained products, Air Conditioning Division, Westinghouse Electric Corporation, Pittsburgh.

Blair's background in Air Conditioning dates back to 1933; he has been in charge of Air Conditioning Service activities for the past nine years.

Following his graduation from the University of Cincinnati in 1929 with a degree in electrical engineering. Blair joined Westinghouse as a graduate student at East Pittsburgh, Pa. After attending Engineering and Design schools he became a development engineer at the Springfield, Mass. plant.

The A. O. Smith Corp., Milwaukee, Wis., has announced three coordinated moves by which the company is enlarging and streamlining its activities in the heating field. These moves are: 1) the introduction of a line of warm air furnaces, 2) consolidation of the water heater division and the heating division into a new Permaglas-Heating division with headquarters at Kankakee, Ill., and 3) transfer of the heating division's manufacturing facilities and marketing personnel from their present location at Toledo to Kankakee.





S. E. Wolkenheim

J. S. Robinson

F. S. Cornell is general manager of the new division. Assistant manager is J. F. Donnelly, recently elected president of the Gas Appliance Manufacturers' Association.

S. E. Wolkenheim is marketing director. Working



# PATHWAY TO PROFITS with

WALSH REFRACTORIES
FOR THE DOMESTIC
HEATING INDUSTRY





COMBUSTION

Walsh-Made PeTeCo Precast Interlocking Combustion Chambers assure complete burning of oil . . , full efficiency.

Greater profits on each installation . . . bigger fuel savings for your customers . . . are the extras you get in Walsh products for the domestic heating industry. On every count . . . from unexcelled manufacturing facilities to long experience, careful selection of raw materials and modern production methods, Walshmade products assure you and your customers of unvarying high quality and dependability.



BAFFLES

Tripod type precast baffles with burnt refractory legs. Saves fuel, Reduces stock temperatures.



WALSH H & B CASTABLE

Money, time and labor saving "mix-and-pour" refractory. In 50 lb. and 100 lb. moisture-proof bags.

#### WALSH PRODUCTS INCLUDE:

Fire Brick • Furnace Liners • Burnt Combustion Chamber Tile Plastic Furnace Lining • Castables • Airsetting Cements Asbestos Furnace Cement • Insulating Fire Brick and Cement Insulating Cement Fill

#### WALSH REFRACTORIES CORPORATION

101 Ferry Street • St. Louis 7, Missouri
FACTORIES: ST. LOUIS, MO. AND VANDALIA, MO.





with him are J. S. Robinson, product manager for furnaces and conversion burners; D. D. Williams, sales engineer for the division; and Don A. LeRoy, sales promotion manager.

FORMAL OPENING of a new White-Rodgers Electric Co. branch will take place in early September. It will be located at 16590 Wyoming, Detroit and will stock a complete supply of controls for servicing Detroit and surrounding area.

The branch will also operate as an exchange agency, having replacement facilities. Plans are in progress for the building of a laboratory for testing controls and the branch will also serve as a control information center.

Charles O'Brien is manager of the new branch, assisted by Don Robinson.

HUGH WEAR, for many years a district sales manager for Iron Fireman Corp., has purchased the Iron Fireman dealership at Columbus, Ohio, and is operating under the name of H. C. Wear & Associates at 860 King St.

JOSEPH T. RYERSON & SON, INC., steel distributors, recently held open house at its St. Louis plant in celebration of the completion of a large addition to its steel service facilities.

The addition consists of three spans, all heated and completely crane served, providing 50,000 sq ft of additional warehouse space. Total plant and office space of the enlarged plant is now approximately 161,000 sq ft.

The appointment of G. T. Kaufman as manager

of engineering service of the new Petro Heating and Power Equipment Division of the Iron Fireman Mfg. Co., was recently announced. Kaufman is now located at the Cleveland héadquarters of the Petro Division.

For the last seven years, Kaufman has been technical secretary of the Oil Heat Institute of America, with offices in New York. Prior to joining OHI in 1945, he spent 23 years with the Petroleum Heat & Power Co. After a period as installation and service manager in their Boston and Mineola, L. I., branches, he served successively as field engineer, supervisor of field engineers, and finally as Petro national sales engineer.





G. T. Kaufman

Eric S. Slater

ERIC S. SLATER has joined Hammel Radiator Engineering Co., Los Angeles, as assistant to the president, A. S. Martinson.

Mr. Slater will head a general expansion program aimed at increasing sales and production of the firm's chief product, vented wall heaters.

THERE'S AN AQULUX MODEL AND SIZE FOR EVERY HOT WATER NEED!

This is the AQULUX 225-V5 Model

Capacity: 270 g.p.h. at 100° Rise 225,000 B.T.U. output, 230 gal. Self Storage

## AQULUX

## WATER HEATERS

give you more gallons of Hot Water for every fuel dollar!

You can sell and install Aqulux Water Heaters with confidence that their performance will measure up to expectations. In private homes, factories and great public buildings all over the world, they have been given the acid-test of time under the most varied and difficult conditions.

Few heating units can match their dependability . . . and still fewer can equal their fuel-saving efficiency. If you have a water-heating problem, it will be well worth your time to check up on the superiority of these famous Aqulux Water Heaters. If you will tell us what you need, we will gladly furnish you with helpful detailed information.

Builders of fine Oil Burner Equipment since 1903

Johnson Oil Burners.

S. T. JOHNSON CO.

940 Arlington Ave., Oakland 8, Calif. 401 No. Broad St., Philadelphia 8, Pa.

# WHITNEY METAL



### WHITNEY-JENSEN No. 5 Jr. HAND PUNCH

A light-weight tool that hardound wide acceptance because it in durable, powerful, ware horse. The No. 3 is has un edigestable location stage clearly mediument to permit quick setting to ano throat depth up to 2. Furnished complete with seven punches and dies in strong metal conving case.

Capacity — 1/4 hole through 16 gp. mild steel Overall length — 81/4 Height of Top — 1/4 Weight — 2 Ju lbs.

WHITNEY METAL TOOL COMPANY

## YOU just naturally

. . . Make more money when you sell . . .

## **GALVAN**

better drainage

## **Products**



ASK your wholesaler! He has a complete stock of all Galvan products.



Elbows • Funnels • Cut-Offs

## **GALVAN**

Mfg. Co.

New Albany, Ind.

## FITTINGS FOR YOU

Nope, we don't make fittings to please ourselves or to please your customers... we make 'em to please YOUI Our years of experience have proved beyond any doubt that the quickest way to attain a good, solid reputation is to keep on making the best product ALL the time. That way we know you'll keep coming back to us for fittings that result in neater and faster installations...and that will help you reduce your labor costs.

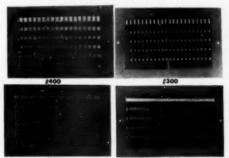
If you're not a Youngstown customer now. then let us show you why it will be to your advantage to always use Youngstown. . . the fittings that really FIT1

## YOUNGSTOWN FURNACE CO.

627 Marshall Street

Youngstewn, Ohlo

## See Your Jobber



£200 Many thousands of the above types used in housing projects. Lawest in price, more free eree.

The Air-O-V an e ceiling diffuser. Also made in type D-R with positive shut-off central (Patents Pending) made in all sizes.



Greatest in free orea of any celling diffuser and lowest in cost. Write for catelegue or see your jobber.

AIR-O-VANE CEILING DIFFUSER WRITE FOR CATALOGUE TO -



19 EAST RILLITO ST. TUCSON, ARIZONA



THE WHITE-RODGERS ELECTRIC Co. has announced the opening of a new regional branch at 35-14 Crescent St., Long Island City.

The branch will service New York City and surrounding area, stocking a large supply of controls, and will also serve as an information center on controls and control systems.

Arnold E. Petersen is regional manager, assisted by Jack Weigert, Frank Crawford and Ed Hartnett.

REX FALKNER is the newest addition to the national sales staff of William Wallace Co., Belmont, Calif., manufacturers of gas vent pipe. He has been assigned to the company's Dallas office, headed by C. E. Blome, midwest division manager.

THE WYOMING OIL Co., Wyoming, Pa., and Hall Brothers Oil Co., Concord, N.H., have been appointed retail distributors for G-E home heating and cooling equipment.

Wyoming Oil Co. will handle oil-fired furnaces. Hall Brothers' distributorship includes both oil and gas-fired units as well as packaged residential air conditioners.

THE A. Y. McDonald Manufacturing Co., Bloomington, has been appointed distributor in 32 Central Illinois counties for the Williams Gas-O-Matic division of Eureka Williams Corporation, it was announced recently.

The Gas-O-Matic division, newest branch of the Williams family, markets a complete line of home automatic gas heating equipment.



## BUY the DIFFERENCE at No Extra Cost

Only Airsan offers you ALL these Filtering features -

- · Galvanized steel frames
- · Bronze welded corners
- Drain solts for quick, easy cleaning
- · Expanded metal face plates act as lint arrectors

Airsan Air Filters are viscous type, permanent and clean-"AIRSAN" is Reg. U. S. Pat. OV. able. Write for free bulletins.

## Air Filter Corporation 108 A NORTH WATER ST. . MILWAUKEE, WIS.

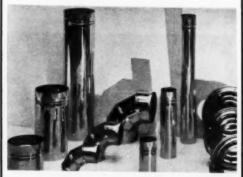
Canadian Representative
DOUGLAS ENGINEERING CO., LTD., MONTREAL

A Few Distributorships Available, Write for Details,

Available NOW from our mutual friend — the WHOLESALER

St. Clair SUPER SHEEN

CHROME PIPE



Super-Sheen Chrome Pipe is a sure money maker for dealers. It's triple-plated on cold rolled steel, 28 gauge with pure copper, ducille nickel, and lustrous chrome. Get it from your wholesaler.

St. Clair Metal Products Co.

3802 SCOVILLE AVE.

CLEVELAND 15, OHIO

## ANGLE RINGS



#### SMOKE STACKS

You can rely on our ability to furnish Log Our ANOLE RINDS correctly relibed to specified also for use in smekestace construction. Bolt or rivet holes are accurately punched and spaced for quick and oncy assembly.

#### VENTILATING DUCT LINES

We also roll Angle Rings in all sizes for round duct connections in air conditioning, heating and ventilating systems.

All Rings correctly made to size—with a true circle and 90° angle. Furnished with ar without bolt heles,

#### EXHAUST FANS



Angle Rings save time and memoy in the assembly of fams of all types. Provides a solid and firm reinforcement for fan units as illustrated. Built to fit your particular assembly in any quantity.

Write for list of stock sizes and discounts—also our illustrated circular describing our complete fabricating serv-

NATIONAL METAL FABRICATORS
2140 S. Sawyer Ave. Chicago 23, III.



SUSPENDED
OR LAYDOWN
AIR CONDITIONING
FURNACES

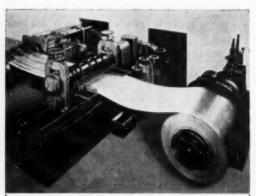


QUIET AUTOMATIC BURNER CORP.

23 33 BLOOMHILD AVE ---- Broadway NEWARK 4 NEW HERSEY NO. 2 PUNCH by WHITNEY

The No. 2 is accepted by busy contractors because it's a real time-saver in the shop and on the job. Men who use it every day know it can't be beat for clean, fast day know it can't be beat for clean, fast and know it can't be beat for clean, fast day know it can't be beat for clean, fast day know it can't be beat for clean, fast day know it can't be beat for clean, fast of 5/16 punching. The No. 2 punch has a capacity of weighs inch hole through 1/4 inch iron. It length. 14 pounds and is 23 inches in length. 15 inches. 14 pounds and is exactly 1 punch and one pepth of throat is exactly 1 punch and one complete tool includes one punch and one die of specified size and die adjusting key. Write us for more information.





## ". . . we're looking for slitting business, too!

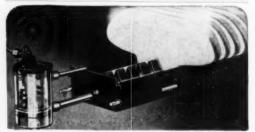
Complete equipment for precision slitting and recoiling; also decoiling, roller leveling and cutting to lengths. METALS — 14 gauge or lighter — any width up to 36".

Write us for details . . . prompt attention is guaranteed.

"Made-Rite" Co., Inc.

Manufacturers & Suppliers
Furnaces — Pipe and Fittings

10th and Monroe St. Newport, Ky.



## The COMPLETE Humidifier Line for Warm Air, Air Conditioning, or Steam

FLOTROL Humidifiers — the finest for air conditioning or forced air, with famous Flotrol control.

No. "310" FLOTROL — for small furnaces (up to 100,000 BTU). Economical, easy to install, has Flotrol control.

MICRO-FEED Humidifiers — low cost, dependable drip-feed

HUMIDITY CONDITIONER — self-contained gas-fired unit, ideal for radiator heating systems.

full details and prices on request.

THE CLEVELAND HUMIDIFIER CO.

7802 Wade Park Avenue

Cleveland 3, Ohio

## MONMOUTH HUMIDIFIERS

MARTIN E. MARSALIS, former owner and operator of the American Metal Products Co., Fort Worth, Texas, has sold his business and opened the only air conditioned hotel in Acapulco, Mexico. Having manufactured evaporative coolers in the United States, he put his experience to work adapting the principles of evaporation to the conditions on the Pacific Coast of Mexico and has developed his own cooler that will be patented in Mexico. He invites all sheet metal contractors visiting Acapulco to stop in and talk shop.



Hotel Pozo del Rey, Acapulco

GENERAL CONTROLS Co. has opened a new office at 410 Asylum St., Hartford, Conn. J. Crandley has been named district manager of the new branch, which brings the total to 32 located throughout the United States.



Your jobs will be smart looking streamlined functional

with HONEYWELL AIR-DIFFUSION REGISTERS



Beauty in appearance plus beauty in performance! That's the two-in-one combination you get when you specify Honeywell air-diffused registers on your jobs. They're a spectacular improvement over conventional warm-air registers

Air blasts, drafts, and cold spots are eliminated; fixedangle turning vanes built right in; labor, material saved.

Use them! You'll be way ahead in the long run, besides giving your customers a smarter-looking, superior job.

For information, call Honeywell office nearest you; or write Honeywell, Dept. AA-8-188, Minneapolis 8, Minn.

- · Complete line for forced warm air applications
- · Easy, improved, one-man installation; elimination of quadrant dampers cuts balancing costs drastically
- . No streeks on wells: manual shut-off for economy



## Honeywell



H First in Controls

## **CUT AN HOUR'S WORK**



Metal Tool



with WERFUL GRIP

WHAT A WORK-SAVER! Simply squeeze hand shut to lock with Ton-Grip . . . never to slip! It eliminates hand gripping, speeds up any job of bending, forming, seaming, crimping, or straightening.

JAW ANGLES designed for both thick work and thin. Extra deep reach—up to 1½". Jaw width is 3½". Just right for bending edges, locking templates to sheets, holding metal strips for welding. Order from your supplier.

By Maker of the Famous VISE-GRIP Wrench PETERSEN MFG. CO., DEPT. AA-8, DeWitt, Nebr.





## & K ORNAMENTAL GRILLES



You will find that H & K Grilles combi

You will find that H & K Grilles combine ultimate in grille art with rapped protection adequate air circulation for all purposes. Portarated in finally finished, unbreakable mylates, these Grilles of harmonieness beauty richness will render years of enduring ser A wide selection of distinguished modern classical patterns can be perforated—be herense, steel, stainless steel, aluminum, menicial silver and other metals, as governoratrictions permit. There is practically no limitation to the shape or form of Grilles we can furnish, may be rectangular, square, round e add in a and flat, curved or angular in form. Frames, lauvers, invisible hand hele deers registers can be furnished to meet exacting is

registers can be furnished to meet



arrington & St., Chips. 44 -- 114 Liberty St., N.

## PROFIT NOW!

WITH

GRAND RAPIDS FURNACE CLEANERS



cleaning pr Rapids Fur ing capacit

It's easy to get a lion's share of furnace cleaning profits when you use a Grand Rapids Furnace Cleaner. Greater cleaning capacity, handling ease and practi-

cally designed groups of furnace cleaning attachments help you give better service and clean more furnaces per day at a higher profit.

Act now! Write today for complete information and prices.

DOYLE VACUUM CLEANER CO.

227 Stevens St., S.W.

Grand Rapids 7, Michigan



## THE FERDINAND DIECKMANN CO.

ESTABLISHED 1871

P.O. STATION B

CINCINNATI 22, OHIO

Andrew E. Reiss has been appointed chief engineer of Morrison Steel Products, Inc., Buffalo.

Mr. Reiss' background includes over 20 years in the sheet metal industry, covering all phases of engineering and manufacturing, and over 20 years in the heating, air conditioning, ventilating and refrigeration industries.



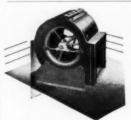




Andrew E. Reiss Amiel B. Caramanna Clayton A. Stahlka

HARVEY-WHIPPLE, INC., Springfield, Mass., has appointed Amiel B. Caramanna factory representative for oil heating and air conditioning equipment covering the state of New Jersey, metropolitan New York and Long Island. Mr. Caramanna has for several years been active in both the retail and wholesale end of the oil heating field throughout Eastern Pennsylvania and New Jersey.

CLAYTON A. STAHLKA has been appointed advertising manager of Morrison Steel Products, Inc., Buffalo. Mr. Stahlka has been advertising manager of R. G. Wright Co., Buffalo, for the past two and one-half years.



# MASSACHUSETTS AIR CONDITION IN G FURNACE BLOW ERS

Designed for manufacturers of warm air furnaces and air conditioning equipment.
Wheel Sizes 7½" to 27"



Housing sides, cutoff plate and scroll sheet. Heavy gauge steel stampings.

End spider suspension type wheel assembly.

Write for catalog

Manufacturers of centrifugal blowers for 36 years

The BISHOP & BABCOCK Mig. Co.



- A practical, accurate air velocity meter for heating, air conditioning, and ventilating work. Indispensable for measuring grille velocities and air deliveries from registers and grilles; for balancing forced air heating systems, and for checking air distribution of all kinds of ventilating systems.
- Accurate velocity readings, automatically averaged over a 3" dia.
   free area, instantly indicated in feet per minute.
- Extension handle facilitates positioning of instrument away from the observer for readings in hard-to-reach locations, or where the observer's body would interfere with the normal air movement.
- Unique scale lock makes possible to retain scale reading when desired until the lock is released—an indispensable feature where extension rad is used to position instrument away from the observer.
- Leather case is furnished as standard equipment for added protection when the instrument is not in use and for convenience when corrying it in the pocket.

Ask your Jobber for the FloRite or write for Leaflet 760.

## BACHARACH INDUSTRIAL INSTRUMENT CO.

7000 BENNETT STREET . . PITTSBURGH 8, PA.

## DISTRICT SALES MANAGERS

## An Unusual Opportunity

Expansion and growth of nationally advertised warm air heating equipment manufacturer will require dividing districts to add three more managers, Southeast — Mid-Central — and Northwest.

- Almost fifty years of quality manufacture.
- Complete line. Gas, oil, coal, gravity and forced air units.
- Opportunity for experienced warm air heating equipment men.

Must know merchandising. Must be able to travel.

Write GENERAL SALES MANAGER BOX 904 AMERICAN ARTISAN



## CORROSION

from

attacking sheet metal. USE

## "370 SPECIAL"

RED OXIDE PAINT

You have an edge on competition when you use "370 SPECIAL." It keeps customers happy because it has excellent gloss retention and great durability.

You will be pleased with "370 SPE-CIAL", too. It goes further per gallon — covers 5 to 6 squares per gallon, one coat, it hides well and goes on easy. Order from your "370 SPECIAL" distributor.

## THOMPSON & COMPANY

1085 Allegheny Avenue Ookmont, Pa

Established 1847



## PENN-AIRE FURNACES

Winter Air Conditioning and Gravity

CAST IRON, COAL FIRED

Popular Price

Practical Design

**Economical Operation** 

UNION MANUFACTURING CO. INC.

Boyertown, Pa.

# Steel BENDING BRAKES



CHICAGO hand-operated bending brakes are available in a variety of standard sizes ranging from 3 to 12 feet in capacities up to 12-gauge sheet metal.

#### also

CHICAGO Portable Hand Brakes
CHICAGO Box and Pan Brakes

Full Particulars upon Request

## DHEIS & KHUMP CHICAGO

HomEase is the Burner that offers you the Exclusive

FLAME-IZER ... high CO2 flamefitting to the individual fire-box, quickly, easily!

VARIOUS MODELS:

.5 to 15 gph

FIRE-STAT... more starting air thus less sooting and smoking on cold starts!

MORE SALES..
GREATER PROFITS
easily!

HomEase has an important place in thousands of homes ... has thousands of satisfied owners ... it should have an equally important place with you.

Get the all-important facts, Now

HomEase Products Company

PATERSON 3, NEW JERSE

Think

UNITED STATES AIR CONDITIONING CORP. has appointed Lamatt Agency Div. of the Southern Heater Co. of New Orleans as its representative throughout Mississippi, the major portion of Louisiana and the western part of Tennessee.

The assigned territory will be served by three offices of the Lamatt Agency — in New Orleans, at 840 Baronne St., in Jackson, at 2840 Arbor Hills Dr., and in Memphis, at 1482 Madison Ave.

JACK FARRELL, 806 Shorb Ave., N. W., Canton, Ohio, has gone into business as a manufacturers' agent and will cover the Ohio territory for manufacturers of warm air heating and sheet metal equipment. Mr. Farrell was formerly with Milcor Steel Co.

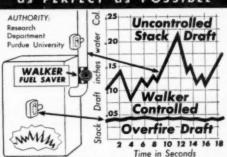
BEN M. McDougall, has been made sales manager of Kennard Corp., St. Louis. The announcement was made recently by the firm's president, Sam M. Kennard III.

McDougall joined the Kennard Corp. three years ago as assistant sales manager, and as such has been in close touch with many of the people engaged in the industry. Prior to joining Kennard he was a salesman for Heat Transfer Products. He is a member of ASRE, ASHVE, and serves as Kennard's representative to REMA.

GEORGE J. HANNES, research analyst in the distribution research department, has been named administrative assistant to Herbert A. Fox. technical manager of the Fiber Glass Division at Parkersburg, W. Va.



## Here's DRAFT CONTROL ERFORMA as PERFECT as POSSIBLE



### ATTAINED BY FAMOUS WALKER FUEL SAVER

This chart, based on impartial university research, shows how perfectly a Walker Fuel Saver performs. Sound engineering...patented super-sensitive rolling contact hinge...high quality materials ... expert craftsmanship assure a long life of trouble-free automatic control.

> for every conventional heating purpose.





ADAMS

CHIMNEY CAPS

(CAST IRON) For 6, 7, 8, 9 & 10"

> Chimney Extensions



**Buy Adams Known Quality** 

## THE ADAMS COMPANY

REIDGE STREET . Established 1883 . DUBUQUE, IOWA

## ORNAMENTS



## STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW.

MILLER & DOING

89 ADAMS STREET

BROOKLYN, N. Y.

## THE RIGHT SHEARS FOR ANY CUTTING JOB

## MARSHALLTOWN



ROTARY THROATLESS SHEARS

QUICKER

CUTS ALL SHAPES-SIZES

- EASIER
  - FASTER

Here's a shears that's right for every job. Speedy efficient. Cuts up to 1/4 inch stock — speed to 5 n. per minute. Excellent for irregular cutting or straight splitting. Available in hand operated or motorized models. Prompt shipment. Send today for special illustrated

MARSHALLTOWN MFG. CO. Marshalltown, lowa

Increase Profits-Reduce Noise-with the



# NIVERSAL

FOR ALL FLANGE TYPE OIL BURNERS

Reduces by 85%, all vibrations to pass thru air ducts — Easy to insen ald and new burners — No spetchals necessary — installs with bean present equipment. ake am Extra Profit on very installation or rvice call on a flunge pe oil burner

For Complete Details, Prices and Discounts write today to-

#### EQUI-DYNE, Inc.

1722 N. WINCHESTER AVE.

CHICAGO 22, ILLINOIS

Hard to SODER - Aluminum, Cast Iron

Steinless Steel

**Galvanized Metals** 





6702 BRYN MAWR AVENUE, CHICAGO 31, ILL.



Telephone ME-40549

VECTAIRE MANUFACTURING CO. 251 Howard Street Meirose, Massachusetts

- Built in Air Adjustment
- · Uses small duct work

Send 35 cents for VICTAIRE metallication man



Forced Warm-Air Baseboard Heating System

REPAIR PARTS for all FURNACES **BOILERS, STOVES • Guaranteed to FIT** 

## A. G. BRAUER Supply Co.

2100 Washington Ave.

St. Louis, Mo.

## STYLE K END CAP "FRICTION TYPE" -BB-



Made in sizes 4" and 5" Galvanized Steel #28 and #26

Packed 3 dozen per carton half right and half left hand.

Sold thru leading jobbers everywhere

Manufactured by

## BERGER BROS. COMPANY

229-237 Arch Street

Philadelphia 6, Pa.

# ALVENT **Roof Ventilators**

Sell these lower cost higher capacity profit makers Swartwout

**Gravity or Powered** 

6 popular throat sizes. Write for data sheet.

The Swertwest Company 18511 Euclid Avenue Cleveland 12, Ohio

## Everett L. Muman

EVERETT L. WYMAN, 58, executive secretary of the National Heating Wholesalers Association, Inc., died July 18 in Cleveland Clinic Hospital.

Mr. Wyman went to that city in 1949 from Washington, where he had been head of the steel warehouse division of the old Office of Price Administration.

Prior to World War II he was vice president of Clayton Mark & Co., a Chicago steel manufacturing concern. He served as an air force captain in the first world war.

Mr. Wyman was a native of Waterville, Me., and a graduate of Colby College.



## BRDM

The IMPROVED Compound Lever Shears



ALL-ALLOY No. 2 cuts up to 1/4" steel plate.
ALL ALLOY No. 1 cuts up to No. 11 gauge strip or sheet

## BREMIL MANUFACTURING CO.

1800 Pittsburgh Avenue

ERIE. PA.

## MILTON SHEET METAL MACHINERY SPECIALISTS

STOCK DELIVERY ON PEXTO. CHICAGO BRAKES, DIACRO, ROUSSELLE PRESSES, KIDDER, WHITNEY, ROTEX PUNCHES, REX WELDERS

WE CARRY A COMPLETE STOCK OF NEW & USED HAND & POWER MACHINERY.

WE STOCK PUNCHES & DIES & ADAPTERS FOR ALL PRESSES & BRAKE DIES, SHEAR BLADES & SPOT WELDER-TIPS & HAND TOOLS.

## MILTON EQUIPMENT COMPANY

N.E. COR. 4th & Race St.

Phila. 6, Pa.

WAInut 2-1734

## Big Time and Money Savers for YOU! LOCKFORMERS

- · Cut Over-All Febrication Costs in Half. Make Pittsburghs 15 Times as fast as you Can Make them on a Hand Bending Brake.
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Easy edgers and power flangers also available for immediate shipment.

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Vacuumizing Housel
2. The "Banked Coal Fire" effect on Burners & Stokers.

3. While Burner is running heat held in for up to 3 times longer.

Sold through limited number of franchised dealers. Huge Market! Great Major Equipment Sales Aid. Write NATIONAL FUEL CONSERVATION CO. WHITE PLAINS, N.Y.

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viruses, thus reducing colds and other respiratory

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#### for sale

For Sale — Furnace and sheet metal business in the heart of the newly developed Wilston Basin oil territory. This business will stand your careful inspection. Address Key 903, American Artisan. 6 No. Michigan Ave., Chicago 2, III.

For Sale — Kleen Master Furnace with Wis-consum air cooled motor. Complete with 15 For Sale — Kieen Maker Parnace with Wis-conson air cooled motor. Complete with 15 sections rubber and steel hose, reducer and 4 mach hose, and 30 foot bag. Like new. Price \$975.00. Conley Heating Company, 749 Ter-tace Avenue, Columbus, Ohio. Phone Jordan

#### situation wanted

Position Wanted as Sales Engineer or Installa-tion and Service Manager. Many years of ex-petience in the sale, application and service of oil burner equipment on all fuels. Ability to handle men and the training of dealers person-nel. Also have had both laboratory and field experience with major oil company. Would consider any location. Address Key 308. Amer-ican Artisan. 6 No. Michigan Avenue, Chicago 2, Ills.

## situations open

Heating and air conditioning engineer for sales and management. Oil distributor needs capable man to handle established heating department before ecanodic needs of the condition of the conditio

SALES REPRESENTATIVES — Large manufacturer of competitive priced oil and gas furnaces disquested with stay-at-home, desk type salesmen, has several openings for men who know how to "beat the-bushes" for business. This is a TOP BRAND-NAME LINE. Sales to wholesalers only. Liberal straight commission. State experience and sales record. Address President, Box 1059, Trenton 8, N. J.

## situations open

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Young Man, preferably with engineering educa-tion and sheet metal background for position with general sheet metal contractor. Excellent opportunity. Mid-Western CRy, 80,000 popula-tion. Address Key 910, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

FSTIMATOR GENERAL SHEET METAL Firm with 25 years in South California, Powered equipment throughout. Too estimators only need anply in writing statine qualifications, are and salary required. Ed Herlocker & Co., 2611 Exposition Boulevard, Los Angeles 18, Calif. CLASSIFIED SECTION. Rates are 10 cents for each word, including heading and address. One inch \$5.00. Count seven words for keyed address. Minimum \$2.00. Remit to AMERICAN ARTISAN, 6 No. Michigan Ave., Chicago 2.

#### wanted

WANTED: Shearings any amount - all sizes Stanless and copper 6" minimum width 36" minimum length, uniform quantities. Gauges from 16 to 50 inclusive.

Write or wire Los Angeles Sheet Metal Mig. Co. 901-905 East 9th Street, Los Angeles 21, Calif. Trinky 4715

### agents wanted

Manufacturers Representative Wanted — A leading manufacturer oil agricularly advertised domestic warm air furnaces lass an opening available in the Chicago area for an aggressive sales representative. It you are not atrad to work, qualified to do a constructive job, and have a desire to earn a better than average income, we suggest you forward a resume of your qualifications and background. Address Key 905, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

Manufacturers' Representatives Wanted! Several probtable territories open for aggressive men to market nationally advertised line of oil and gas-fried residential turnaces priced for the volume builders market. Downstate Illinois, Missouri, Iowa, Minnesot and Wisconsin. Give detailed qualifications in hist letter. Address Key 900, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

Are you interested in becoming a leading manufacturers representative in the St. Louis-Kansas Cety area, for a company manufacturing Residential Warm Air Furnaces? It you are, please send your qualifications to Key 900, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

Adissan, o No. Michigan Ave., Chicago 2, Ili. Sales Representative Wanted — Michigan, Minnesota, Missouri, Olio and some other good exclusive territories available. Must be capable of selling out service to heating, air conditionments of heating, and refrageration equipment. Long established mid western firm. Repeat orders, commission basis. Very profitable for man able to handle this since it is a service to the trade very much in demand today. Address Key 881, American Artisan, 6 No. Michigan Avenue, Chicago 2, Ill.

Wanted Salesmen and Manufacturers representa-Wanted Salesmen and Manufacturers representa-tives to represent our complete furnace line-ldeal territories open. New engineering and newly designed furnaces just added to old estab-lished well known line manufactured by us. Fer-ritories protected. Need aggressive sales people and the services of the property of the property of the address. The Rybott Heater Co., Ashland, Ohio-

#### situation wanted

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## SERVICE SECTION

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Lockformer Pittsburgh Machines Lockformer Cleat Machines Chicage Hand Brakes Chicage Press Brakes Paxte Pawer Sheers Pexte Foot Sheers

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Whitney Punches Whitney Foot Presses Wilder Slitters Pexto Machanic's Tools Black & Deckar Electric Tools

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FOLDING BRAKES channels. Pittsburgh locks and all kinds of focks and all kinds of flanges, vees, zees. Handles 24, 26, 28 gauge mild steel, and heavier aluminum and copper. Can be holted to 30, 36, 48 copper, Can be butted to bench of trust or on included, 32" high floor stand, All steel construction. Shipped express collect, 30" size, 95 lbs., 333, 50 38", 105 lbs., 38, 800 48", 135 lbs., \$33,00. Order direct, cash or C.O.D., or send for folder



These pages represent an ideal opportunity for manufacturers to get their messages across to readers of a national publication in their field. Whatever you make or sell, you'll find a large, receptive audience, easily reached at a minimum outlay. Rates are only ten dollars per column inch, and one inch is the minimum space accepted. Plan now to move your products quickly and economically with consistent advertisements in this section.

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Drills Concrete 1/4" to 11/2"

A powerful, fost drilling tool for contractors and maintenence departments. Separate the two members and it's a heavy duty \$\frac{h}{2}\times \text{less} \text{include the test of the test of till.}

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waste it by looking around
for items or personnel

to make your organization more efficient? A simple classified

> in American Artisan will turn the trick for you quickly and

at low cost. No matter what you need or have to sell one of our readers will have it

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on preceding page.

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... is tomorrow!



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All aluminum vent cap • Increased customer acceptance • Increased profits • Top performance under all conditions • Made in six sixes 3" to 8" incl. • Dealer & Jobber inquiries invited.

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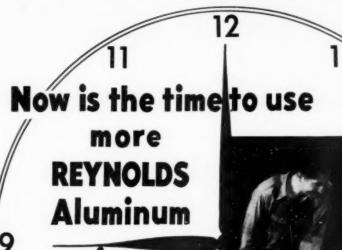
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